

Cranfield University

**Cranfield University**

School of Industrial and Manufacturing Science

Department of Computer Integration

**School of Industrial and Manufacturing Science**



**RON DVIR**

***The potential for leverage between the Quality Management  
and Knowledge Management professional communities:***

***An Intellectual Capital mapping.***

2002

**Ph.D. Thesis**



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### **Department of Enterprise Integration**



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## **The potential for leverage between the Quality Management and Knowledge Management professional communities:**

### **An Intellectual Capital mapping.**

### **Ph.D. Thesis**

**Supervisor: Professor Stephen Evans**

**Academic Year 2002**

*This thesis is submitted in partial fulfilment of the requirements for the degree of  
Doctor of Philosophy*



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## Abstract

This research describes the problems facing two important professional communities, Quality Management (QM) and Knowledge Management (KM), which face multiple challenges in their efforts to impact the organisations in which they operate and contribute significantly to their performance and financial results. The two communities are positioned at very different points in their maturity life cycle. While QM is an aging community that is trying to regain its relevancy, the KM community is still in its infancy, and is struggling to mature. Many practitioners and academics consider both to be “over promising and under delivering”.

The aim of this research is to explore how the two communities can enhance their effectiveness. As a theoretical framework the author used the concept of Intellectual Capital, which is usually used in the context of formal organisations, and applied it to the case of professional communities. The hypothesis states that the two communities have complementary Intellectual Capitals, i.e. that the intangible assets of each can be shared and exchanged through different patterns of interaction. An investigation was conducted into whether the flows of such intangible assets between Quality Management (QM) and Knowledge Management (KM) can increase their organisational effectiveness.

The research surveyed the scientific as well as professional literature and classified the evidence on QM/KM interactions into twelve patterns that cover the spectrum, from complete ignorance of each other to full co-operation.

Two case studies are explored, where explicit efforts to encourage flows of Intellectual Capital were demonstrated, one at a company level and the other at a national level.

A unique methodology and visual tool, to map the Intellectual Capital of professional communities, was developed and used to draw a generic map of the complementary ICs of QM and KM and the potential flows between them, as perceived by a diverse body of experts from both communities.

Finally, a series of (computer aided) focus groups were held with professionals.

Based on triangulation of the data between the 14 expert interviews, 2 in-depth case studies, 68 focus group attendees and the literature, the following contributions to knowledge were identified:

- ❑ Creation of a new scheme to classify interactions between professional communities.
- ❑ The application of the Intellectual Capital concept to professional communities.
- ❑ New insights into the situation of QM and KM communities using the framework of Intellectual Capital, and the complementary nature of their intangible assets.
- ❑ New perspective on flows of Intellectual Capital between different entities (in this case professional communities) as a way to increase the effectiveness of both.
- ❑ A new methodology to self-assess and map Intellectual Capital.



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## Acknowledgements

It is a great honour and pleasure for me to express my deepest thanks to many people who helped me, pushed me and accompanied me through this long adventure.

Firstly, I would like to thank my supervisor Professor Stephen Evans, for being my teacher, in the most profound meaning of the word. I learned from him the meaning, beauty and some of the principles of a new domain for me - science. This was done in a very kind and non-imposing way. Thank you for accepting that there is no one right way, and respecting diversity and different styles and ways of thinking and doing things. Professor Evans was also very good at picking interesting places to conduct conversations about my research. For example, to name a few of the places - during climbing the highest peaks in Wales, on a ski slope near Lintz, in the desert in Israel, on the shores of Tel Aviv and in the central meeting room of the Ecotechnology building at Cranfield

I would like to thank Itzik Dana, who trusted me enough to enable me to experiment for many years with some of the ideas which later became the basis for my research.

My thanks goes out to the many experts who, not only agreed to be interviewed for my research, but also fully contributed, each one of them, heartily. Their openness, sincerity, engagement and many ideas were a major contribution to my work. It is an honour for me to mention their names: Dr. Edna Pasher, Arian Ward, Dr. Norman Roth, Professor Ron Kennet, Juan Prieto, Scott Hawkins, Hava Sher, Dr. Avraham Huly, Itzik Dana, Atai Ziv, Zur Keren, Dr. Amihud Hari and Lilia Aberbuch.

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Finally, love and flowers to my wife, Nurit, who was patient enough for many years not to ask "why do you need it?", and encouraged me in many ways to do it. Love and chocolates to my children Tom, Bar, Peleg and Tzlil, for providing me with enough happiness to nourish my energy and dedication.



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## Author Profile

Ron studied Industrial Engineering in the Technion - Israel Institute of Technology, where in 1987 he received a BSc. In 1990, he received an MSc in Computer Integrated Manufacturing (CIM) at Cranfield University.

He started his professional career as a carpenter – specialising on massive pine wood furniture. This is where he learned the real life facts behind manufacturing, product design and project management.

Following this he became a designer of complex material handling systems – automatic warehouses, strategic distribution centres, and logistic information systems.

In the early 90's, Ron worked for a High-Tech company (TechCom) in the telecom systems market, in the area of Total Quality Management. In 1996 the evolving field of Knowledge Management captured his imagination, so he became the first CKO in Israel, and led the company KM program. In 1999 Ron was the planner and academic manager of the national conference of the Israeli Quality Association. He participated in the steering committees of the subsequent conferences, and in them led the Knowledge Management tracks.

Ron is an active researcher in several large research projects funded by the European Community in the areas of Knowledge and Innovation Management. These include NIMCube, Rodeo, Disrupt-IT and Symphony.

In 1999 Ron established a small consultancy and research practice, called *Innovation Ecology*. The company focuses on innovation encouraging environments, processes and tools, such as Future Centres and Ideas Pipelines.

He is author to more than 15 journal articles, conference papers and book chapters.



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# Publications

## Books

Dvir, R., Pasher, E. and Roth, N, (eds.). (2002). "From Knowledge to Value: Unfolding the Innovation Cube", Edna Pasher Management Consultants, Tel Aviv.

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Dvir, R., Evans, S, Pasher, E., Prieto, J., Roth, N. (2000), "New-Use, Innovation & the Delicate Balance between Them" , proceedings of the 9th International conference on Productivity and Quality Research, Jerusalem.

Dvir, R. and Evans, S. (1998). "Mapping Knowledge Reuse in R&D Processes – The Implementation of Quality tools." Proceedings of the 12<sup>th</sup> International Conference of the Israel society for quality, Jerusalem

Dvir, R., (1997) "Insights about the implementation of QFD and ICDM methodologies in the early phases of the R&D process", in the proceedings of the 4<sup>th</sup> National conference of the Israeli Quality Association, Jerusalem. (Hebrew)

Dvir, R., Pasher, E., Evans, S., Roth, N, Prieto, J. (2000). "How to Manage the Balance between New-use and Innovation in R&D Processes", proceedings of the 3<sup>rd</sup> conference of the European Chamber of Project Management International, Jerusalem.

Dvir R. (2000). "How to Manage the Balance between New-use and Innovation in R&D Processes - White Paper – A fictional story in 8 acts", presented and distributed in the KM Europe 2000 Exhibition, Brussels

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## **Abbreviations**

ASQ – American Society for Quality  
BIC – Business Information Centre  
BPR –Business Process Reengineering  
CI – Competitive Intelligence  
CRM – Customer Relationship Management  
CKO – Chief Knowledge Officer  
CIO - Chief Information Officer  
CoP – Community of Practice  
EC – European Commission  
CTO – Chief Technology Officer  
EFQM – European Foundation for Quality Management  
EKMF – European Knowledge Management Forum  
HR – Human Resources  
IC – Intellectual Capital  
ISO – International Standards Organization  
ISQ – Israel Society for Quality  
IT – Information Technology  
KM – Knowledge Management  
QA – Quality Assurance  
QC – Quality Control  
QFD – Quality Function Deployment  
QM – Quality Management  
R&D – Research and Development  
ROI – Return On Investment  
SBU – Strategic Business Unit  
TQM – Total Quality Management

### **Company names**

Due to confidentially reasons, the author used the substitute names, TechCom, HiAero and HiDef, to represent three of the companies which are discussed in this thesis.



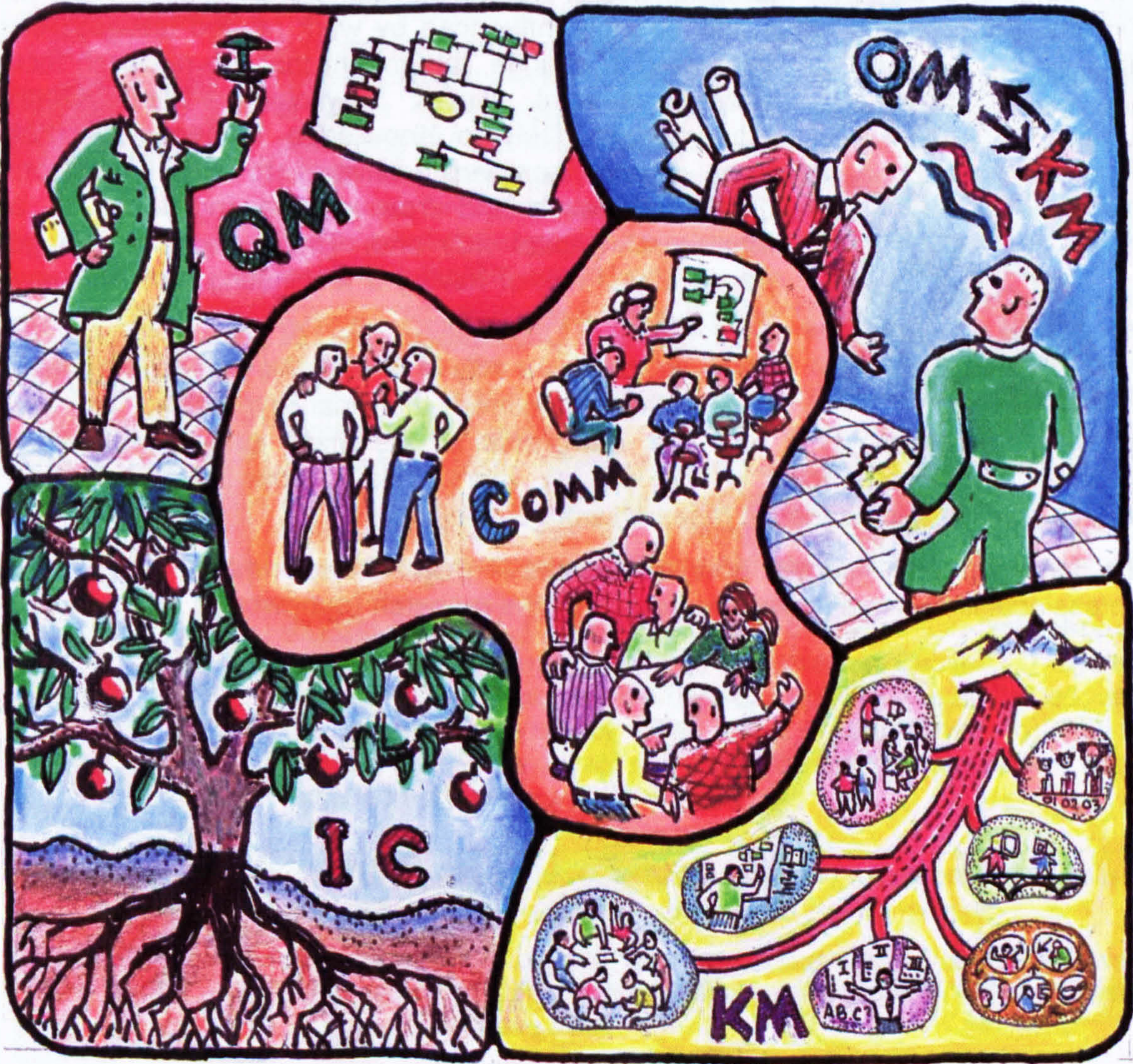
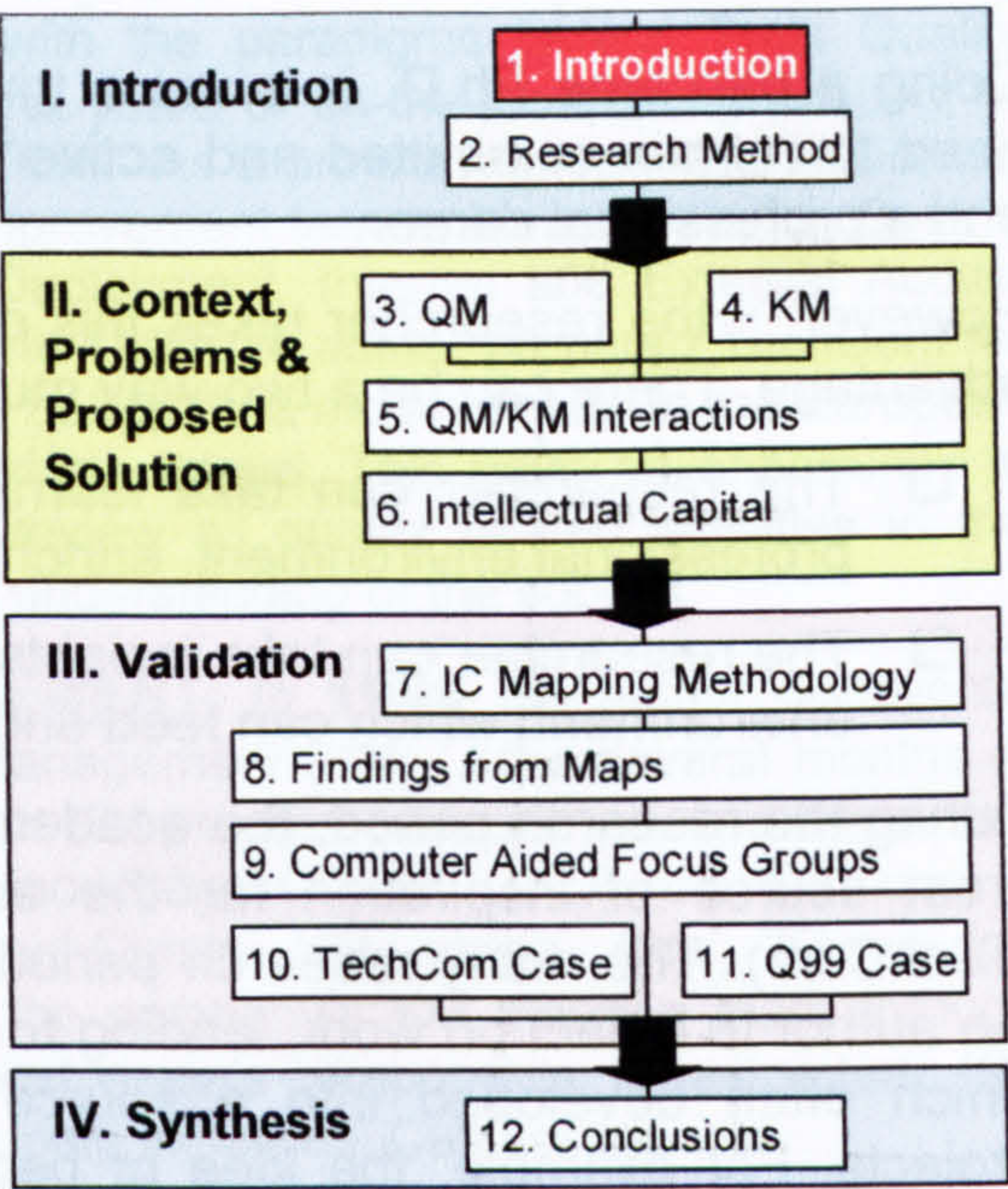
# 1 Introduction

## 1.1 Aims

This chapter provides the background information for this research.

After reading it, the reader will understand:

- What is the **business problem** that is explored by the author?
- What are the **research questions** that arise from this problem and from the proposed solution?
- Why the author chose to focus on this particular problem, and how the proposed solution is linked to the personal professional history of the author?
- How is this thesis structured?



The research puzzle



## 1.2 Research Puzzle

Doing a part time Ph.D. is a not a trivial challenge. The major difficulty lies in the need to remain committed and active in two demanding areas: academic research and a professional career.

However, if the researcher takes this difficulty into account, it can be turned into an advantage. There can be a two-way mutual nourishment process, in which:

- ❑ The researcher can take learning from the academic work into the professional environment, enriching the job related activities.
- ❑ The researcher can take insights, learning and experience from the job environment, which can feed and enrich the scientific research.

During the research period, the academic environment of Cranfield University was a great source of inspiration for the authors' work in TechCom Telecom Limited (TechCom). The many research periods in Cranfield offered a good opportunity for the author to reflect on work, leading to engaging conversation with work colleagues, which often developed into a source for new ideas, and even incubating new projects. For example, the idea of becoming TechCom's Chief Knowledge Officer (CKO) was born in Cranfield library.

The other direction was more significant. During the authors' long part time PhD. journey, the research focus was strongly influenced by work related issues. Being interested in change, this meant that the research focus altered several times, switching from Quality Management (QM) to Knowledge Management (KM), from internal company activities to the professional community level, and from engineering focus to an Intellectual Capital (IC) one. These frequent changes posed a real risk of having a fascinating time but never completing the research.



However there is a way of turning this into an advantage. The author structured the final hypothesis into one coherent framework, in a way that **integrates** all the major professional areas, initiatives and experiences, of the last six years. This is how the link between professional life and academic research work was established.

The following table shows how the pieces - major milestones in the authors' professional life – were finally integrated into the research framework.




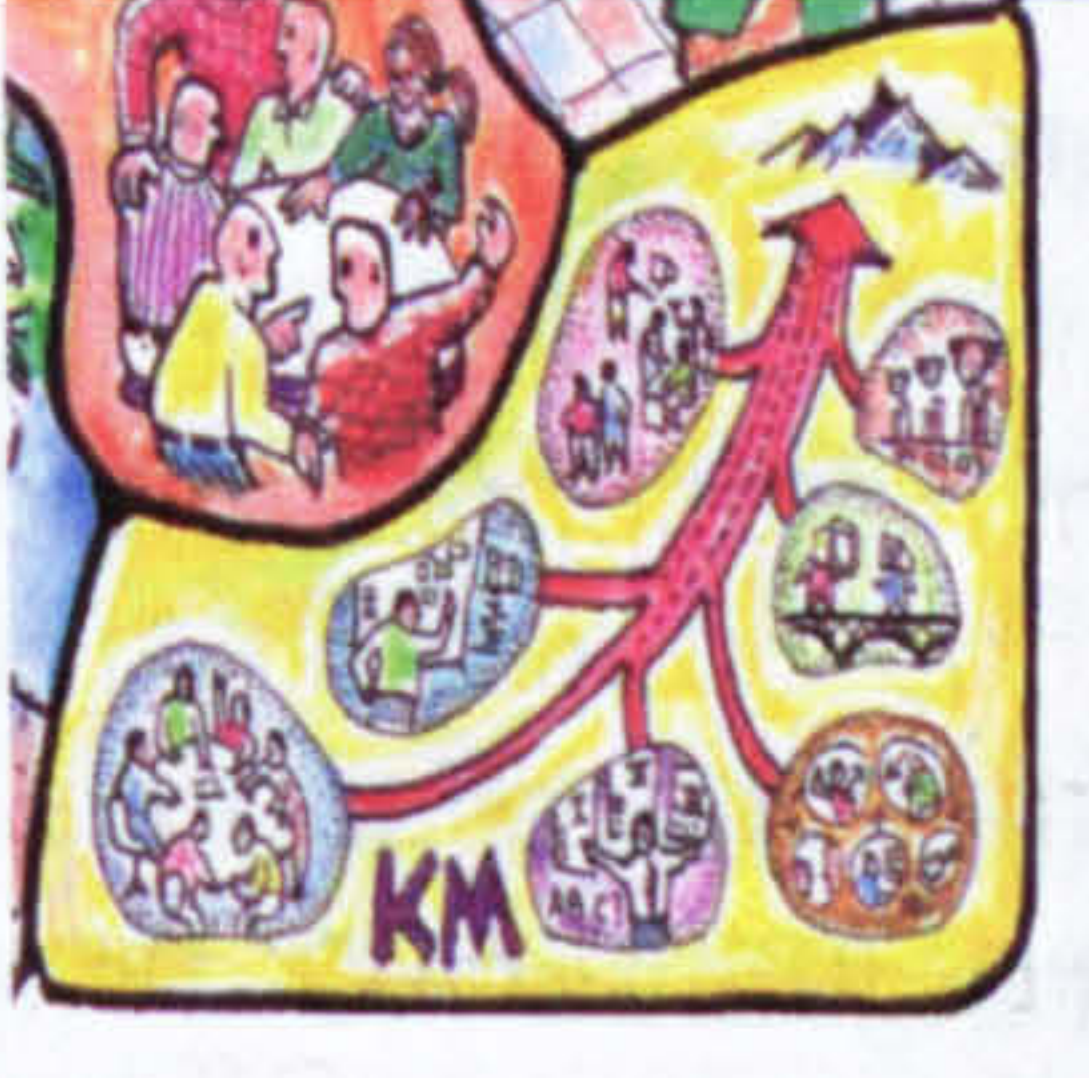
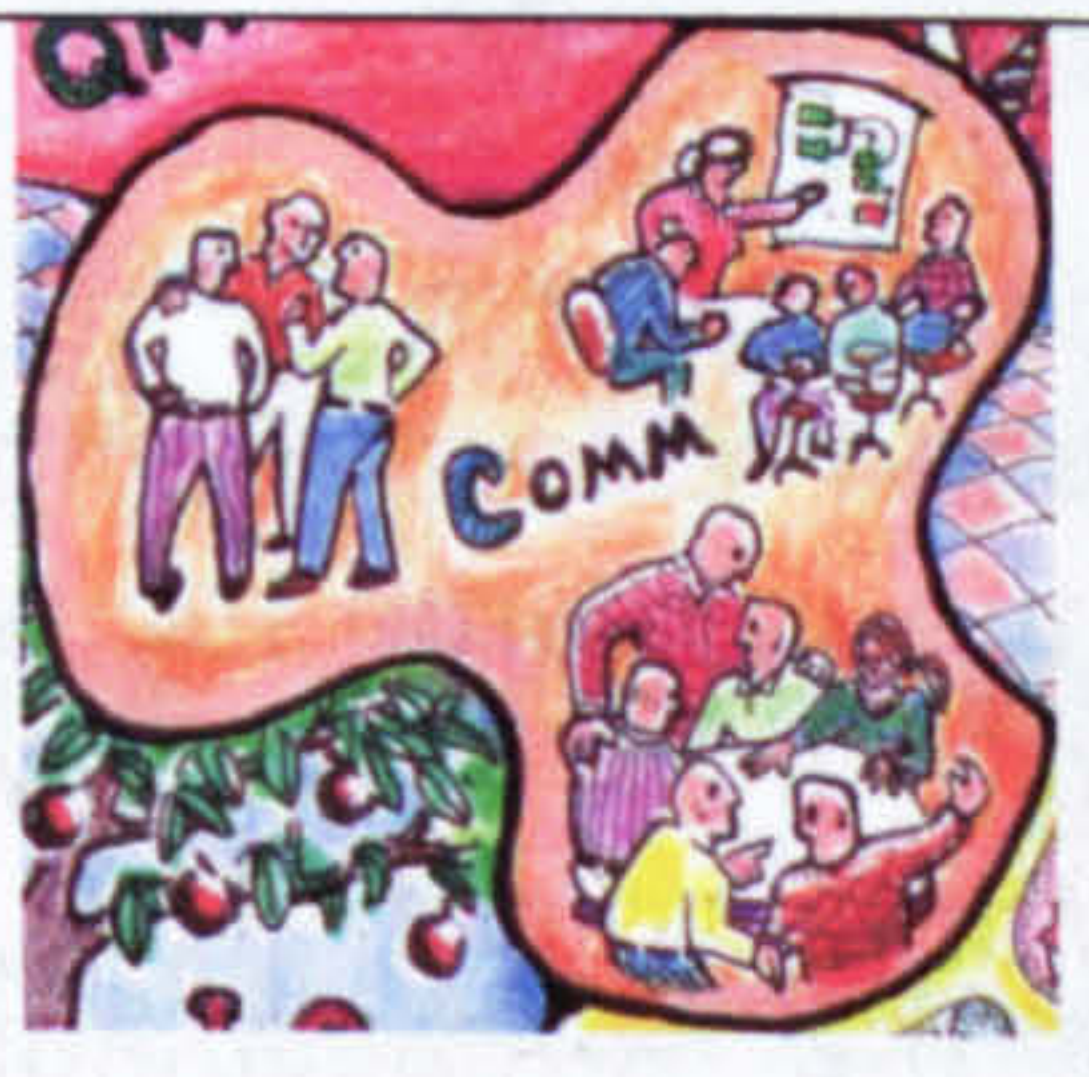

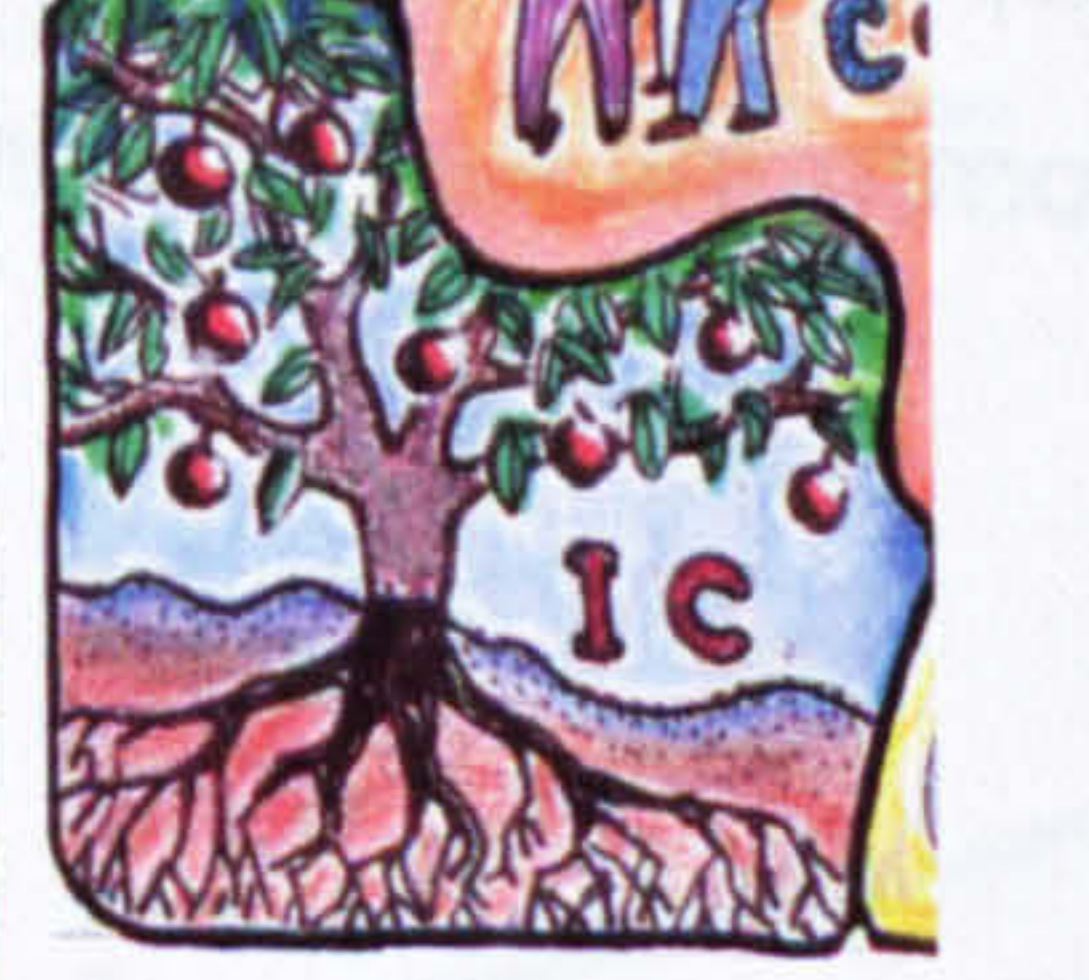

	<p><b>QUALITY MANAGEMENT:</b> In <b>1993</b> the author was appointed as a Continuous Improvement engineer in TechCom and immediately became totally absorbed with the paradigms behind Total Quality Management (TQM). Several years of on-the-job-training ensued, in the concepts and tools of TQM. As a project manager the author led initiatives in the areas of improvement teams, Measurements, Cost of Quality, Quality Function Deployment, Internal and External Audits, Procedures, Supporting IT. In 1998 the author prepared TechCom for the National Quality Award, based on a model similar to the European EFQM and American Baldrige Award. This gave an opportunity to scan, learn, analyse and review all quality related activities in the company, and enhance his understanding of the subject.</p>
	<p><b>KNOWLEDGE MANAGEMENT:</b> In <b>1996</b> the author discovered the world of Knowledge Management (KM). After several months of initial learning, the TechCom KM program was started, and the author was appointed as Chief Knowledge Officer (CKO) (the first one in Israel). After drafting TechCom's KM vision (the "Knowledge Highway") the author led the company's KM steering team through many activities covering most vision's components: Infrastructure, KM processes, Knowledge mapping initiatives, Cultural aspects.</p>
	<p><b>PROFESSIONAL COMMUNITIES:</b> In <b>1998</b> the author became involved in the well established and evolving Israeli QM community. Activities included active participation in planning the national quality conferences, and the Knowledge In Action conferences, lecturing in conferences and in KM courses, articles in the professional publication of these communities, hosting many visits from industry and presenting QM and KM activities. The author initiated the KM in Hi-Tec forum, with active participation of representatives from some 40 companies, and participated in the Hi-Tec quality improvement forum. These activities exposed the weaknesses, strengths and opportunities facing both the QM and KM communities.</p>
	<p><b>INTER- COMMUNITY LEARNING:</b> In <b>1999</b> the author was appointed as the program manager of the 1999 National Quality conference. Believing that the QM and KM communities could learn something from each other, the conference slogan was "Quality by Knowledge". Many of the conference activities were dedicated to explore potential common tools, exchange of ideas and other learning between QM and KM. On a company level, the author tried to integrate some aspects of QM and KM into TechCom.</p>
	<p><b>INTELLECTUAL CAPITAL:</b> In <b>1999</b> the author was firstly exposed to, and fascinated by, the concept of Intellectual Capital (IC) reporting and navigating. A year later a business initiative, the author led, used the concept of IC heavily - The Israeli Future Centre. In 2001 the author became the corner stone in a consulting engagement with a large food corporation.</p>
	<p><b>REASEARCH:</b> In year <b>2000</b> the research hypothesis was finalised, integrating all the above components into one framework:</p> <p><i>"Can flows of complementary Intellectual Capitals between Quality Management and Knowledge Management professional communities leverage both communities?"</i></p>

Table 1.1: The Research Puzzle



---

## 1.3 Professional Communities

Scott (1995) suggests that professionals are the cornerstone of the knowledge ecology, and provides a historical perspective:

*"In different times in places, varying groups control formal knowledge. In some situations they are soothsayers; in others, they are priests; in still other situations, they are intellectuals; but in our own secularised and rationalised times, they are professionals."*

Throughout the thesis the term "Professional Community" is used. Two specific professional communities are the subject of the research. Although intuitively the term is clear<sup>1</sup>, and some people can easily identify to which community they belong, it is important to define it in a more explicit way.

Professions are defined by Jarvis (1983) as "*occupations, which seek in some ways both the mastery of an identifiable body of knowledge and the control of its application in practice*". Drawing on this definition, Professionals are the individuals, which are member of such professions.

For the purposes of this research, the author proposed a working definition of a professional community, which is based on the work of Mullins and Ingvarson (1999):

- ☐ A group of professionals who have come together in a *voluntary* manner, though membership is usually focused on the possession of a set of advanced academic qualifications and knowledge that relate directly to a particular occupation and formal registration may also be a prerequisite.
- ☐ The members share a *common set of values*, a commitment to serve the *client* and a *common set of language structures*.
- ☐ Their organisational mode is *consensual democracy* and the social structure is *egalitarian*.
- ☐ People join the community out of an '*a priori*' sense of '*belonging to*' or '*consciousness of kind*'.
- ☐ The community provides the members with a sense of *common identity* and *status*.
- ☐ Authority is based on *knowledge, research and expertise* not positional bureaucracies or democratic popularity.
- ☐ *Collegiality* is the hallmark of the group's functioning; members are *inclusive* in that the boundaries of membership are not overly regulated and the benefits of membership are not only available to all members but may flow to those within the profession who may not be members.

A checklist has been added to this definition: the Professional Communities have in common some or all of the following membership indicators:

- ☒ Meeting in professional conferences.
- ☒ Speaking the same / common '*professional language*'.
- ☒ May belong to the same professional associations.
- ☒ May be subscribed to the same professional publications.

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<sup>1</sup> Actually, it is not always clear. As discussed in the "IC Mapping Methodology" Chapter, some professionals found it difficult in the interview to determine who belongs to their community. As a lesson learned, after this problem arose a tool (checklist) to help interviewees define their community was added.



- ☑ May join the same training and education institutions and courses.
- ☑ May apply for the same certifications.
- ☑ May participate in the same awards.
- ☑ May have a shared history, and perhaps even formal or informal 'gurus'.

When the "problems" of the QM and KM professional communities are talked about, it is assumed that the members of a community are interested in its sustainability and success. Kanter (1972) wrote of the significance of the individual's commitment to the community. She argued that the community is built on the commitment and the willingness of people to do what is necessary to maintain the community.

Organisations and much of their behaviours can be explained in terms of a quest of immortality (Morgan, 1996). In this respect, professional communities are considered to be similar to organisations.

The literature on QM and KM uses a wide range of terms that refer approximately to the research domain of this thesis. The list includes "Disciplines", "Professional Groups", "Movements" and "Professions". Therefore, when papers were found concerning, for example, "the challenges of the KM movement", they were considered applicable to this research.

In this thesis the term "professional community" is applied in two ways, which differ in their scope: the first refers to a specific group of professionals, e.g. the "Professional KM community of company X". The second refers to the general case, e.g. "the KM community". The author is attempting to draw conclusions on the general QM and KM communities, based on the specific communities explored.

## 1.4 Problem statement

The author proposes that both the QM and KM professional communities are facing multiple problems, which reduces their influence in the organisation, their contribution to the organisational performance, and their overall impact.

While one community faces ageing problems and is beyond its peak, the other suffers from infancy symptoms and challenges, and faces an invisible barrier, which prevents it from generating a significant impact. This situation is shown in the following life-cycle diagram:

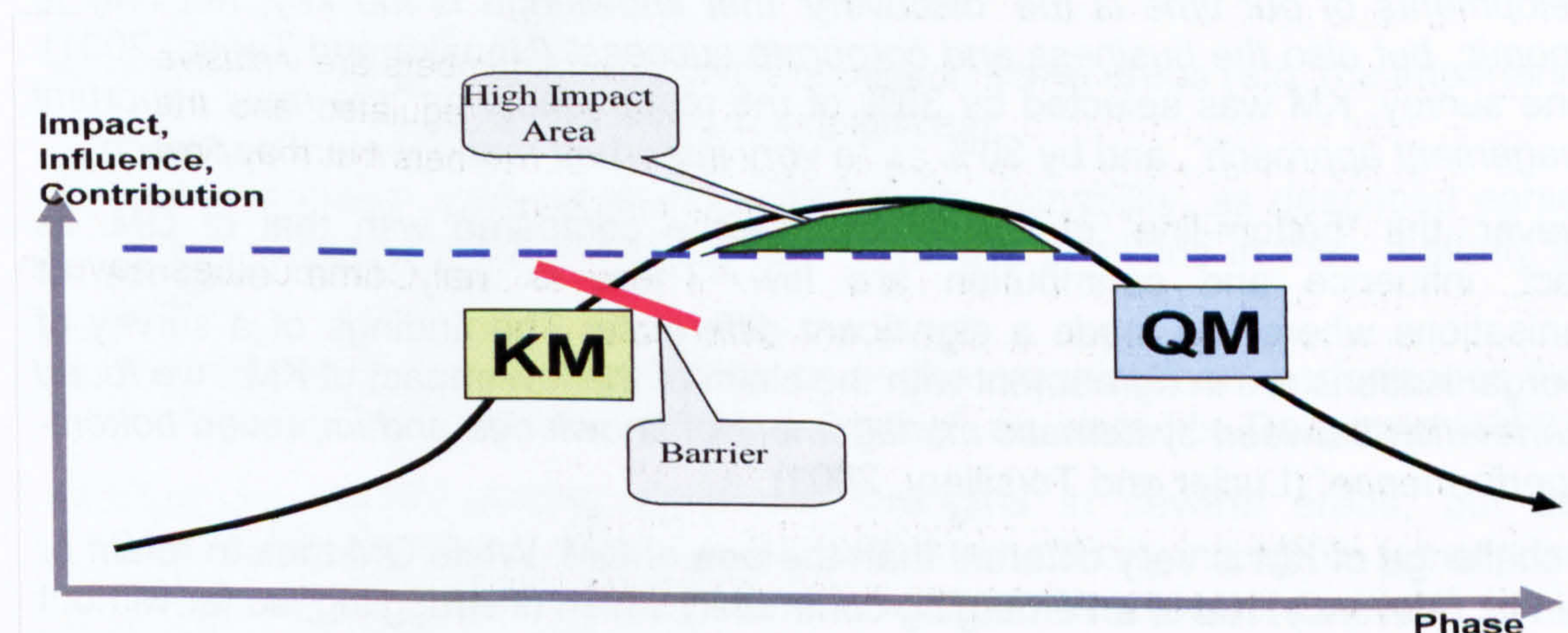


Figure 1.1: Positioning of QM and KM on a maturity life-cycle

While QM is struggling to regain its position in the green/high impact area, KM is trying to arrive there.

In the following sections a more detailed description of this situation is provided.



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## **QM is ageing and beginning to outlive its usefulness**

Historically QM has contributed significantly to the performance of organisations, mostly notably in the manufacturing area. It played a major role in the rise of the Japanese industry in the 60's and 70's (James, 1997), and the recovery of some sectors of the American industry in the 80's - for example by dramatic improvement in the reliability of the automatic industry products (Cohen, 1998). In the 80's and early 90's there was growing management attention in QM, accompanied by considerable growth of the community. However, in recent years the community has faced several challenges:

- ❑ It is being referred to by many as a "pet rock" or "fad". Others describe it as a kingdom of mini bureaucracies, focused more on mechanisms and procedures than the essence of quality (Byrne, 1997)
- ❑ Its "usage" rate decreased from 72% in 1993 to 41% in 2002, with 12% annual defection rate, according to one survey (Rigby, 2001). Another survey suggest similar numbers: QM implementation rates dropped from 73% in 1990 to 55% in 1999 (Smith, 2002)
- ❑ There are indicators that the community is starting to shrink (Larsen, 2001).
- ❑ There are serious doubts about the strategic contribution and relevancy of QM (Suresh, 2002)

Some community members and academics have suggested that the community is "ageing" and *"beginning to outlive its usefulness in many ways"*. The "futures" team of the American Quality Society outlined two strategic scenarios for the future of the QM community, which included the words "demise", and "decline" (Watson, 2002). According to Larsen (2001) QM has reached the maturity phase, where the problems, which led to embarking upon it, are starting to *"leave the can"*.

There is no single root cause for this situation: there are concerns about the loss of relevancy of QM for today's business challenges, lack of strategic direction, conceptual problems and a host of implementation problems.

## **KM is a "sick baby"**

It is widely agreed by most writers on KM that *"perhaps one of most remarkable developments of our time is the 'discovery' that knowledge is the key, not only to economic, but also the business and corporate success"* (Nonaka and Teece, 2001). In one survey, KM was selected by 30% of the respondents as *"the most important management approach"*, and by 30% as *"a very important management approach"*.

However, the "bottom-line" of KM is even worse compared with that of QM: its impact, influence and contribution are low. There is very little evidence of organisations where KM made a significant difference. The findings of a survey of 108 organisations are in agreement with the claim of the low impact of KM: *"we found no correlation between systematic management of knowledge and improved bottom-line performance"* (Lucier and Torsilieri, 2001)

The challenge of KM is very different than the one of QM. While QM tries to retain or regain its relevancy, KM is an emerging community which is struggling, so far without great success, to make a significant difference to change processes, culture and ultimately contributions to the organisational performance.

Some of the indicators are similar to the ones of QM:

- ❑ KM is already referred to by many practitioners as the latest management fad (Hilmer and Donaldson, 1996).



- ❑ KM suffers from infancy problems – for example it is still trying to define itself. One writer put it in very clearly: “*KM baby is indeed sick*” (Moore, 2001).
- ❑ The usage level of KM is low compared to other management approaches (28%) the satisfaction level is lower than average and the defection rate higher than most other surveyed management approaches (Rigby, 2001).
- ❑ Some KM communities have already disappeared or started to shrink (Barth, 2000). “*a disturbingly high proportion of programs initiated with great fanfare are cut back within two to three years*” (Lucier, 1997).
- ❑ The impact and contribution of KM is not clear. For example: “*The activity is apparent and so is the cost. But where are the benefits?*” (Brompton, 2000b).

Thus, the research problem statement has two parts:

- a. **How can the Quality Management professional community regain its relevancy, impact and position as an important contributor to organisational performance?**
- b. **How can the Knowledge Management professional community start to meet the challenge of helping the organisation to “turn the most important asset of the organisation into value and competitive advantage” and delivering significant “return on investment”?**

## 1.5 Hypothesis and Research Questions

### 1.5.1 Hypothesis

The author believes that although different professionals are active in the QM and KM communities they have several things in common.

- ❑ Both are support communities, which aim to help the value-creators of the organisation in improving their performance. Value-creators refer to the people that invent, design, produce and sell the ‘product’, sometimes called the ‘line functions’.
- ❑ Both are holding similar basic assumptions in some areas (e.g. the importance of cultural changes and process improvement).
- ❑ Both are facing major challenges to their sustainability, as described earlier. These challenges are linked to their (different) positions in their maturity life cycles.
- ❑ Both are making a smaller difference on the organisational performance than expected. “*Over promising, under delivering*”, as, stated by Dalrymple (1999).
- ❑ Both are demonstrating significant strengths in several areas, but also weaknesses in others. These assets, which are usually intangible (as opposed to physical or financial assets), are referred to as “Intellectual Capitals”.

A detailed explanation of the Intellectual Capital concept is provided in Chapter Six. For the purpose of the introduction chapter one of the many definitions of this concept is used: Intellectual Capital (IC) includes all of the *intangible resources* that contribute to the creation of value for the organisation. These include the knowledge, competence and skills of people, working methods, processes and systems. It also includes the culture that supports the people, the image in the market place and relationships with customers, alliance partners and suppliers (Intcap, 2002).



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Interestingly enough, the relatively strong and poor areas of each community are different. Applying the terminology of the Intellectual Capital concept, it is suggested that **the QM and KM communities have complementary Intellectual Capitals (ICs).**

Uncovering this point was an important insight for the author – an Aha! moment. This leads to further questions:

Could the QM and KM communities co-operate in a synergetic way? What complementary ICs could they exchange? Could such pattern of relationships improve the effectiveness and impact of both communities? Could it leverage the relative strengths of each community?

Following these thoughts, the research Hypothesis was formulated:

**Hypothesis: Flows of complementary Intellectual Capitals between the Quality Management and Knowledge Management professional communities can leverage both communities.**

### 1.5.2 Research Questions

In order to address this hypothesis, a logical set of research questions was designed and grouped into four categories.

#### I. NEED

The first question attempts to validate the need of the two communities to seek ways to improve their effectiveness. Are they really “over promising and under delivering”? Do they have a sustainability problem? And what are the root causes for this problem?

**Q1: Why do the QM and KM professional communities need to improve?**

#### II. CORE RESEARCH

This group of questions constitutes the core part of the research. The solution that was articulated in the research hypothesis is explored.

Firstly, what is already known about the relationships between the two communities is explored. Of interest to the research is discovering what academics in both areas think about this issue, and learning about communities who have experimented with synergetic patterns of co-operation between QM and KM.

**Q2: What are the potential interactions between QM and KM professional communities?**

Secondly, the author intends to introduce the theoretical framework of Intellectual Capital, and use it to analyse the ICs of the communities, focusing on their relative strengths and weaknesses.

**Q3: What are the Intellectual Capitals of the QM and KM professional communities?**

Thirdly, the insights gained in the previous two questions will be used to identify interesting opportunities for flows of ICs between the two communities.

**Q4: What are the potential flows of Intellectual Capital between the QM and KM professional communities?**



### III. BUSINESS IMPLICATIONS

This section refers to the business implications of the research.

In the previous question potential flows of ICs were identified. In question 5 some advice to the QM and KM practitioners is offered, which attempts to fulfil these opportunities. The risks associated with the suggested IC flows are explored, and some factors that may enable and trigger flows are highlighted.

**Q5: What are the business implications of the flows of Intellectual Capital between the QM and KM professional communities?**

### IV. A 'tool' perspective

In the last two questions attention is turned to the utility of the IC mapping tool developed during the research. The objective of the research was not to develop a tool. However, once it was found that the tool was both innovative and useful for answering the research questions, the author chose to explore possible benefits for other purposes.

Firstly, the author is interested in investigating whether the IC methodology can assist colleagues in QM, KM and other professional communities in their attempt to improve their effectiveness.

**Q6: Does the IC mapping methodology show utility as an improvement tool in the context of professional communities?**

Secondly, the author looks at colleagues from the academic world and asks:

**Q7: Does the IC mapping methodology show utility as a research tool?**

## 1.6 Thesis roadmap

The thesis is structured into four parts, which allow the reader to:

- ❑ Understand **why** the research was required, **what** questions it attempted to resolve, **how** the researcher planned to answer them, and **why** the author decided to undertake this journey (**part I**).
- ❑ Learn about the background to the research problem, the root causes of this problem and the proposed solution (**part II**).
- ❑ Read about the complementary validation tools, which were employed to validate the proposed solution and answer the research questions (**part III**).
- ❑ Accompany the author in the efforts to make sense of the (sometimes conflicting) findings from the different research efforts and integrate them into a set of answers to the research questions (**part IV**).

The following section describes in more detail the content of each part.

### **PART I: INTRODUCTION**

**Chapter One, Introduction**, provides the background to this research by describing the business problem behind the research and the events that led the author to choose this problem as a research focus.



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**Chapter two, Research Plan**, describes the research plan and the tools that were chosen to support the plan. Through a SWOT analysis of the research situation the rational, which led to those choices, is explained.

## **PART II: BACKGROUND, PROBLEM ANALYSIS and PROPOSED SOLUTION**

**Chapter three, Knowledge Management**, explains the origins, history, basic models, components, future trends and challenges of one of the two professional communities explored in the research.

**Chapter four, Quality Management**, provides the equivalent information about the second professional community. Analysis of both sets of information proposes an answer for the first research question, "Why do the QM and KM professional communities need to improve?"

**Chapter five, Relationships between QM and KM**, looks into the literature and identifies many alternative ways to link QM and KM.

**Chapter six, Intellectual Capital Assessment**, introduces the emerging field of IC, since the IC concept was selected to serve as the research framework. It particularly focuses on different methods to assess the IC of organisational entities.

## **PART III: VALIDATION**

**Chapter Seven, the IC Mapping Methodology**, describes a tool developed by the author to rapidly assess the ICs of professional communities and the potential flows between them. The chapter also describes an interview process that was integrated into the IC mapping process.

**Chapter Eight, Findings from the IC Maps and Interviews**, summarises the data collected in the interviews and through the maps, and provides an initial analysis of this data.

**Chapter Nine, the Computer-Aided Focus Groups**, describes a process developed by the author to collect data from a large group of the QM and KM Israeli communities about some of the research questions. The way in which a tool for electronic meetings was applied in this process is also presented. The results of the focus groups are discussed.

**Chapter Ten, TechCom Telecom case study**, describes an attempt to exchange ICs between the QM and KM communities of a hi-tech company. The findings and initial conclusions from the case study are discussed.

**Chapter Eleven, Quality 99 conference case study**, describes an attempt to exchange ICs between the national Israeli QM and KM communities. The findings and initial conclusions from the case study are discussed.

## **PART IV: PUTTING IT ALL TOGETHER**

**Chapter Twelve, Conclusions**, integrates the findings from all data collection efforts into a comprehensive set of answers to the research questions. It also provides reflections about the research methodology that was used, and future research directions.

The following figure is a visual navigator to the thesis:





Figure 1.2: Thesis roadmap



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## 1.7 A note on visualisation

*"One picture is worth a thousand words".*

This quote, which is frequently attributed to Confucius<sup>2</sup>, mirrors thoughts about the utility and power of visualisation. The author always favoured visualisation techniques as a preferred way to generate processes and communicate ideas in business. It was only natural to introduce a large amount of visualisation into the research work. It served several functions:

- A way to generate ideas in the interviews – several colourful markers and white sheets were always available on the table and used by both the interviewees and interviewer to enhance conversations.
- The cornerstone of the most important data collection tool developed and used in this research, namely the IC mapping methodology.
- A way to communicate ideas in the thesis. The reader will find many "pictures", in various styles, throughout the thesis.

The "pictures" used can be roughly classified into two groups: structured charts (e.g. flow charts, graphs and IC maps) and illustrations of various situations. The latter type introduces a flavour of humour into the thesis – which is believed to be a contributing factor to most cases of successful communication. In these illustrations, visual metaphors are used many times, because they may *"stretch imagination in a way that can create powerful insights"* (Morgan, 1996). Lakoff and Johnson (1980) emphasise the power of metaphors and argue that they are an integral part of our society and language which makes it a form of communicating that is deeply ingrained and understood intuitively by Western cultures, they state *"In all aspects of life...we define our reality in terms of metaphors and then proceed to act out on the basis of the metaphors."* (Ask for more from Karen)

## 1.8 Conclusions

In this chapter the author has introduced some of the major themes of the research, which are discussed in greater detail in the following chapters.

Firstly, the research puzzle was introduced, as a way to communicate the strong links between the authors' background and the research content. The efforts to enhance these links, as well as the risks involved and the respective counter measures will be a repeating issue throughout this thesis.

Secondly, the research problem was presented as a set of two separate challenges – each concerned with a different professional community. The proposed solution suggests that a synergy between the two communities is a way to improve the situation of both, which justifies the inclusion of both problems in one research.

Thirdly, the research questions were introduced. Although most of them refer directly to the core business problem and proposed solution, two questions take a side path and explore the use of one of the data collection tools, which were developed, into a wider business and research context.

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<sup>2</sup> Fred R. Barnard, created the saying "One look is worth a thousand words", for an ad in *Printers' Ink*, 8 Dec., 1921, p. 96. He changed it to "One picture is worth a thousand words" in *Printers' Ink*, 10 March 1927, p. 114, and called it "a Chinese proverb", so that people would take it seriously." It was immediately credited to Confucius (Stevenson, 1987)

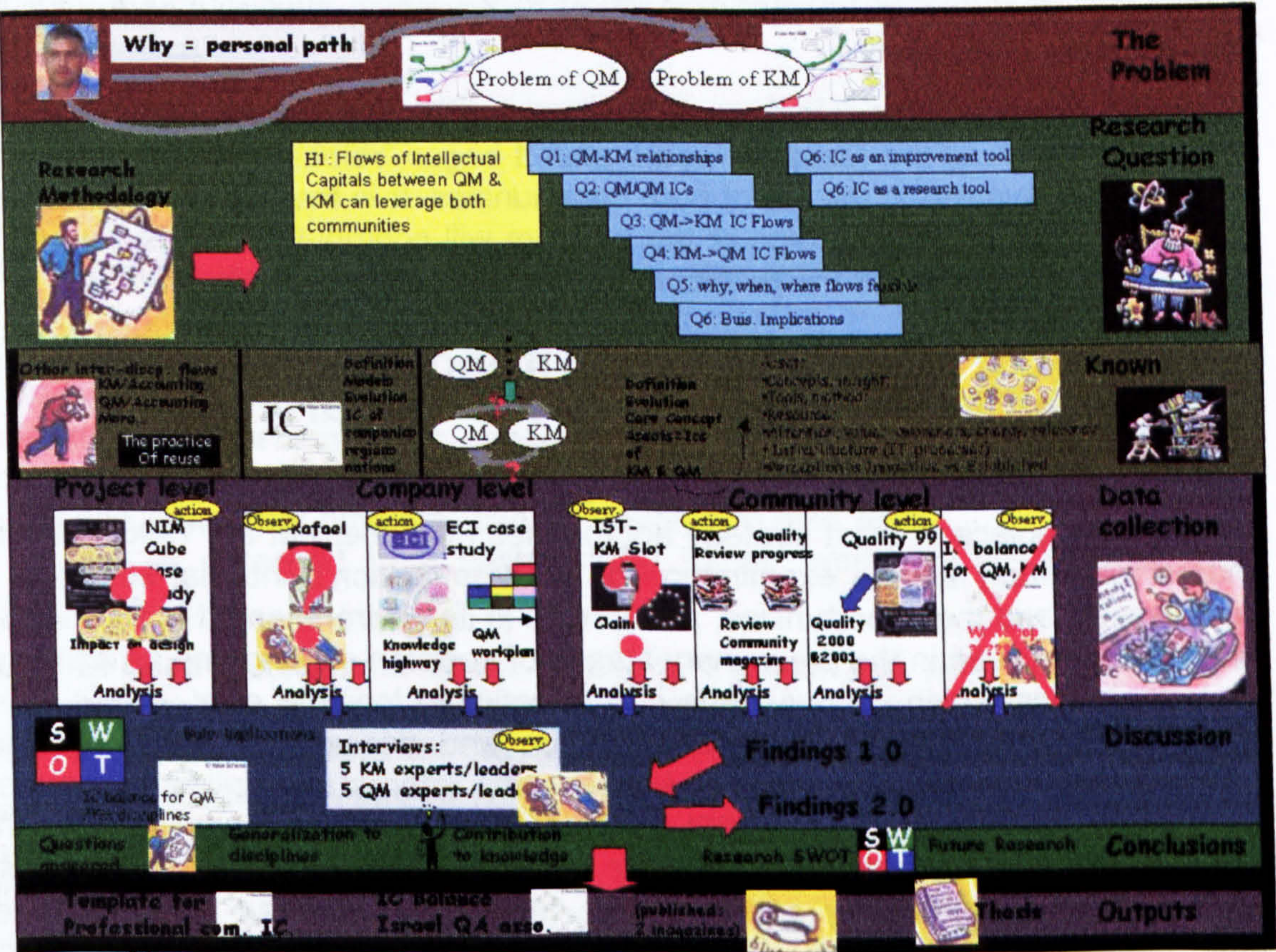
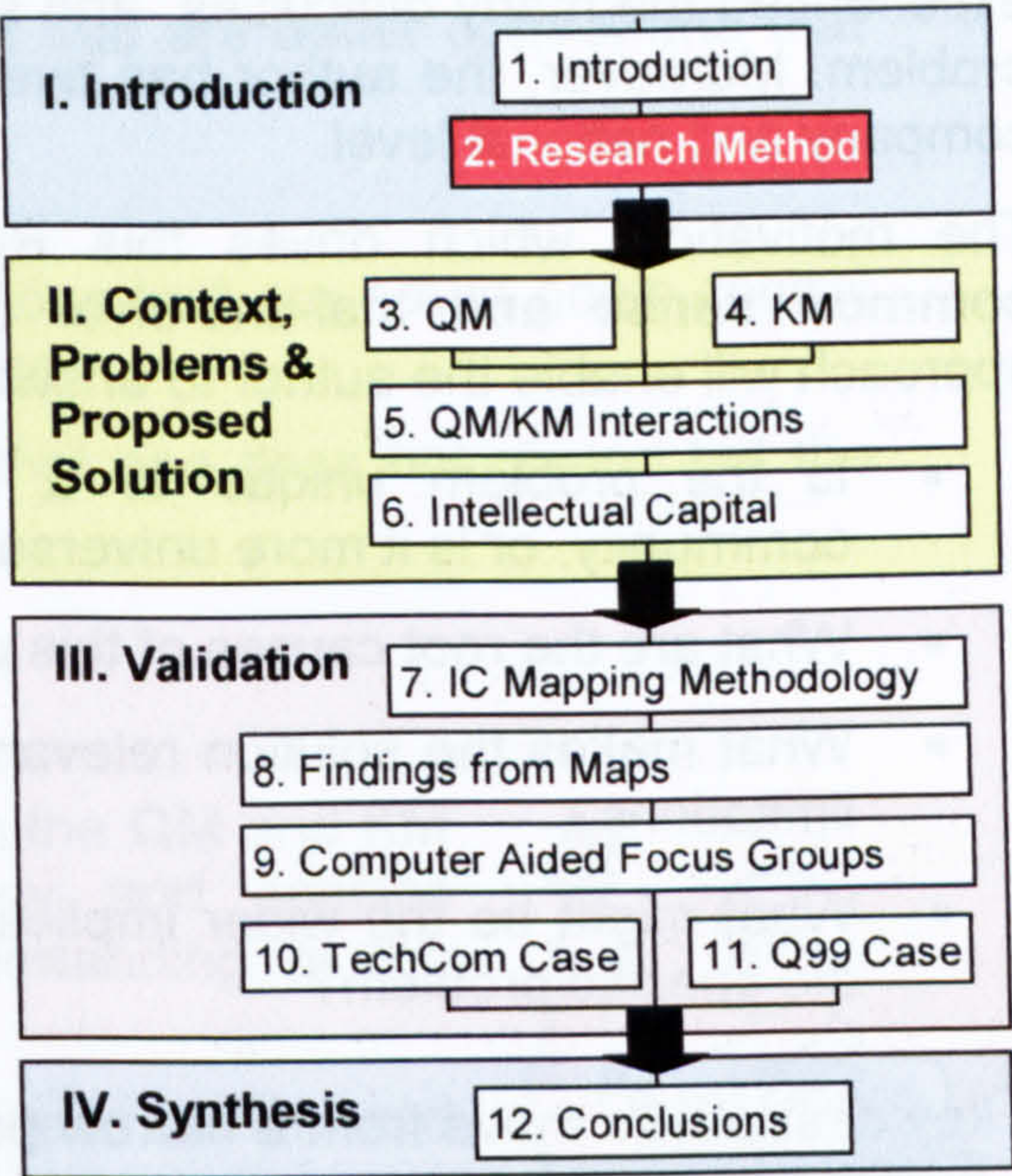


# 2 Research Method

## 2.1 Aims

The aim of this chapter is to explain what the research strategy undertaken in this work is, and why it was chosen. At the end of the chapter, the reader will understand:

- The motivation of the author to pursue a scientific approach to the problem previously treated with intuitive tools.
- What the benefits and constraints that impacted the selection of the research strategy were.
- The research tools that were employed in the research.
- How those tools integrated into a coherent research strategy and flow.
- What the weaknesses and risks of the chosen plan were, and how the author planned to overcome, or at least, minimise them.



The research program – one of the earlier versions



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## 2.2 Desire

As shown in the “Research Puzzle” section (Chapter 1), the author has personally experienced the many difficulties, and sometimes frustrations, linked to the research problem. Moreover, the author has even tried to solve this very problem, on both a company and national level.

The motivation, which drives this Research, is to complement this **intuitive, common sense and** trial-and-error approach with a **scientific** one. Such an approach will enable the author to answer such questions as:

- Is the problem unique to a specific company and professional community, or is it more universal and general?
- What are the root causes of this problem?
- What makes the solution relevant to these root causes? What are its limitations?
- What might be the wider implications of the solution, beyond solving the specific problem?

A key desire is to move from a narrow personal (and probably biased) perspective to a much wider, deeper and more objective look at the reality of QM and KM communities.

Applying scientific rigour to the specific problem and solution, which are discussed in the thesis, will serve an additional purpose – to enhance the scientific skills and competencies of the author.

The move from the intuitive approach to the scientific one is only part of the picture. The problem behind the research, years after it began, remains as real as ever. The author is still involved in the life of both communities. It is the authors' belief that the rigorous scientific understanding of the problem will contribute to the success of the continuous efforts to solve the problems of both professional communities.

## 2.3 SWOT Analysis: Strengths, Weaknesses, Opportunities and Threats of the research plan

The SWOT analysis tool emerged in the 1970's as a strategic management tool and is still a centrepiece in most strategy approaches (Mintzberg *et al.*, 1998). It can be understood simply as the examination of an organisation's internal strengths and weaknesses, and the opportunities, and threats in its environment. It is a general tool designed to be used in the preliminary stages of decision-making and as a precursor to strategic planning in various kinds of applications (Johnson *et al.*, 1989). It is an effective tool to analyse a complex situation and deconstruct it into actionable components. It seeks to attain a fit between the internal capabilities and external possibilities (Mintzberg *et al.*, 1998). This is why the author applied the SWOT analysis methodology to the design of the research program. It was used to help in explicitly and systematically assessing the factors that needed to be considered when designing the research. Although most applications of SWOT are based on group workshops there are cases in which it is applied on an individual basis. This was the case in this research, where the author reflected and identified potential problems, blind spots and relative advantages, discussed them with his supervisor and colleagues, and then categorised them into the systematic SWOT categories, which are:



**The Internal Factors:**

**Strengths:** Internal positive aspects that are under control and by planning one may capitalise.

**Weaknesses:** Internal negative aspects that are under control and that one may plan to improve.

**The External Factors:**

**Opportunities:** Positive external conditions that are not in one's control but which can be planned to an advantage.

**Threats:** Negative external conditions that one does not control but the effect of which may be reduced.

**2.3.1 Strengths**

- ☑ In depth personal involvement in both the QM and KM communities of a specific company and specific country, leading to first hand understanding of the problems involved.
- ☑ Access to information about all activities of the QM and KM community of a specific company.
- ☑ Good network and working relations with leading experts in both domains.
- ☑ Desire to help both communities to improve their performance (this is also a weakness).
- ☑ Extensive experience with visual and graphical tools as a preferred communication method.

**2.3.2 Weaknesses**

- ☒ The major constraint in a part-time Ph.D. Research is the fierce competition for the limited time resources of the researcher. This implies that the researcher does not have the luxury of spending long periods of time on entering, learning and mastering completely new domains. This also means that the researcher is limited to the amount of time that can be devoted to field work, which is detached from his/her daily "other" world (in the authors case business)..
- ☒ The deep involvement of the author in the explored problem domain and even specific research problem was presented as a strength. But at the same time it represents the risk of personal bias and loss of objectivity (Robson, 1994). A special threat was that the research problem might have been a personal problem of the author and not a universal one.





### 2.3.3 Opportunities

- ✎ The invitation to co-lead the 1999 National Quality conference was a major opportunity to test some of the ideas explored in the research. The invitation to participate in the steering committees of the following conferences was an opportunity to track the long-term results.
- ✎ The participation in a large scale European Commission funded research project, NIMCube, provided the author with some insights into fast assessment methods.
- ✎ Consultancy assignments with several Israeli hi-tech organisations, which provide some access to their QM and KM, related activities (but not as intimate as the access to the TechCom case).
- ✎ Access to world experts in the domain of Intellectual Capital.



### 2.3.4 Threats

- The QM and KM problems are related to their maturity situation. Therefore there was the threat that the “problem would disappear” during the research period, which would make the solution less relevant.
- It was assumed that the situation of specific QM and KM communities depends not only on the generic characteristics of each but also on the specific factors involved in each community. Therefore, wrong selection of the explored communities could have led to wrong conclusions on the general case of QM and KM.
- The communities’ members may consider the investigation of the professional communities, especially ones that are facing serious challenges, as a criticism, and perhaps even a threat. Therefore, there is a risk that some of the communities’ members will be reluctant to uncover the full reality.



## 2.4 Research Strategy

Based on the SWOT analysis, the elements of the research strategy were defined which intended to maximise the use of the strengths and opportunities, and minimise the impact of the weaknesses and threats. The following strategic elements were chosen:

### 2.4.1 Triangulation

*“Triangulation is a method of finding out where something is by getting a ‘fix’ on it from two or more places”*(Robson, 1994). Yin (1994) states that triangulation, being the rationale for using multiple sources of evidence, significantly contributes to the quality of the research output. For this particular research it was thought that triangulation was particularly important as a major countermeasure to the risk of the researcher’s personal bias. It was also critical in order to enable the generation of some conclusions based on a limited amount of data. The idea of triangulation was realised along two dimensions:



- Data sources triangulation: this was realised mostly by careful selection of interviewees, in order to maximise diversity of explored communities as well as diverse perspectives of the same communities.
- Method triangulation: several research tools and methods were applied. The five tools used in the research are discussed later on in this chapter.

### 2.4.2 Action Research

Action research is defined as *"participant observation with active intervention"* (Gummerson, 1991).

According to Carr and Kemmis (1986) action research involves three elements:

- ☐ The improvement of a practice
- ☐ The improvement of the understanding of a practice by its practitioners
- ☐ The improvement of the situation in which the practice takes place.

The researcher is involved in all the aspects of the action research, including planning, acting, observing and reflecting (Carr and Kemmis, 1986).

An action research approach was used due to several factors:

**Richness of information and expected new knowledge:** Although the notion of 'Action Research' is not new, there is an open dispute between the supporters and the opposers of action research. Although the risk of bias is considerable, the author adopts the opinion that *"more and more researchers are discovering that research which is directed at problem solving and change, also is research which yields new knowledge about the social phenomena under study"* (Jenks, 1970).

**Opportunity:** there was a good opportunity to do action research in two places (TechCom and Q99). Moreover, when the research started, the author was involved in an effort to improve the practice and situation of some QM and KM communities.

### 2.4.3 Multiple methods: Complementing the action research and case studies with surveying methods

*"Surveys are the collection of information in standardized form from groups of people"* (Robson, 1994).

It was felt that the action research conducted in two cases would not yield enough data to arrive at general conclusions. This, combined with the need for triangulation and a desire to standardise the conclusions, led to the decision to use several surveying methods to further explore the research questions.

There are more advantages to multiple methods. They can help the researcher address different but complementary research questions. Furthermore, they add to the richness of the information gained throughout the research, and provide multiple perspectives to analyse this data.

### 2.4.4 Quantitative versus qualitative data

Traditionally, phenomenology would suggest qualitative methods and tools for data collection and validation (Easterby – Smith *et al.*, 1991). Indeed, during the data collection and validation phase the author largely relied on qualitative research. The application of quantitative methods and tools in a real life context is challenging, as



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real-life problems are often of "a messy nature" (Phillips and Pugh, 2000) and therefore it is difficult to fully control the variables in order to ensure robust high-quality quantitative data. Qualitative research allows a much richer and deeper understanding of complex real-life scenarios, as opposed to quantitative data analysis. Qualitative understanding does not require simplifications that might heavily influence the quality of the data. However, as the potential of quantitative methods is enormous, regarding generalisation and replication to other settings and circumstances (Robson, 1994), the author also employed quantitative methods and tools in the data collection, development and validation phase. It should be noted that the motivation for quantitative data collection and analysis was not to create strongly statistically validated and verified data. Instead the author applied quantitative methods in order to triangulate some of the propositions derived from qualitative data.

#### **2.4.5 Use of existing theoretical models as a framework.**

Robson (1994), following the work of Yin (1994), describes two alternative ways to analyse quantitative data:

- ☐ Basing the analysis on a descriptive framework: looking for a set of themes or areas and linking them to the research questions without a particular theoretical framework.
- ☐ Basing the analysis on theoretical propositions: the theoretical stance helps to frame the research questions to be asked, design of the research, the analysis of the data collected by the research, and the formulation of the conclusions.

The author decided to take a hybrid two-stage approach: in the first chapters of this thesis a descriptive approach was used (for example to analyse the relationships between QM and KM using a descriptive framework created by the author). Then, the theoretical framework was added, namely flows of ICs, which was used until the final chapter. The theoretical framework is based on existing theory but with additions from the author. It was thought that this hybrid approach was optimal for explaining the research findings.

### **2.5 Putting the SWOT conclusions and research strategies into the research framework**

Once the SWOT factors were identified and mapped, and the research strategy was identified, a research plan was generated which focussed on the strengths, leveraged the opportunities, and counter balanced the weaknesses and threats. The author drew the following operational conclusions from the SWOT analysis.



Category	SWOT Factor	Implications to research plan	Related strategies
Strengths	Good understanding of QM and KM	Focus on QM and KM as the problem domains	
	Intimate involvement in QM and KM programs in TechCom	Use TechCom as a main case study	Action Research/ Case studies
	Strong network of leading experts in the QM and KM domains.	Capture multiple perspectives and test by interviewing leading experts.  Test tools on these experts in order to get rich feedback.	Surveys
	Experience with visual tools, and preference of visual language	Base research tools of visual language.	Surveys
Weakness	Part time – limited time resources	Maximum use of information available to the author during his “regular” work.	Action Research/ Case studies
		Data collection tools must be fast to design, validate and implement.	
		Exploit business work assignments as platform for testing ideas and tools.	Action Research/ Case studies
	Bias, lack of objectivity	Triangulate from 5 perspectives: Intensive literature survey, TechCom case, supporting information. From other companies, interviews, IC assessments.	Triangulation  Quantitative vs. Qualitative
Opportunities	Quality conferences	Use 1999 conference to validate problem.  Use 1999 conference to test solution.  Use following conferences to validate conclusions form 1999 conference.	Action Research/ Case studies
	Exposure to the leading experts in Intellectual Capital	Consider Intellectual Capital as a conceptual framework for the research.	Theoretical framework
Threats	The specific problem is arguably time-dependant and might disappear	Ensure applicability of tool to other communities or domains.	
	Community members may consider the investigation as an attack on them, and hide some critical points	This can be dealt on a tactical level: for example in interviews, the fact that the data will remain confidential and anonymous needs to be clarified.	

Table 2-1: Conclusions from the SWOT analysis



The following figure shows the research tools and their relations to the research strategy and research questions.

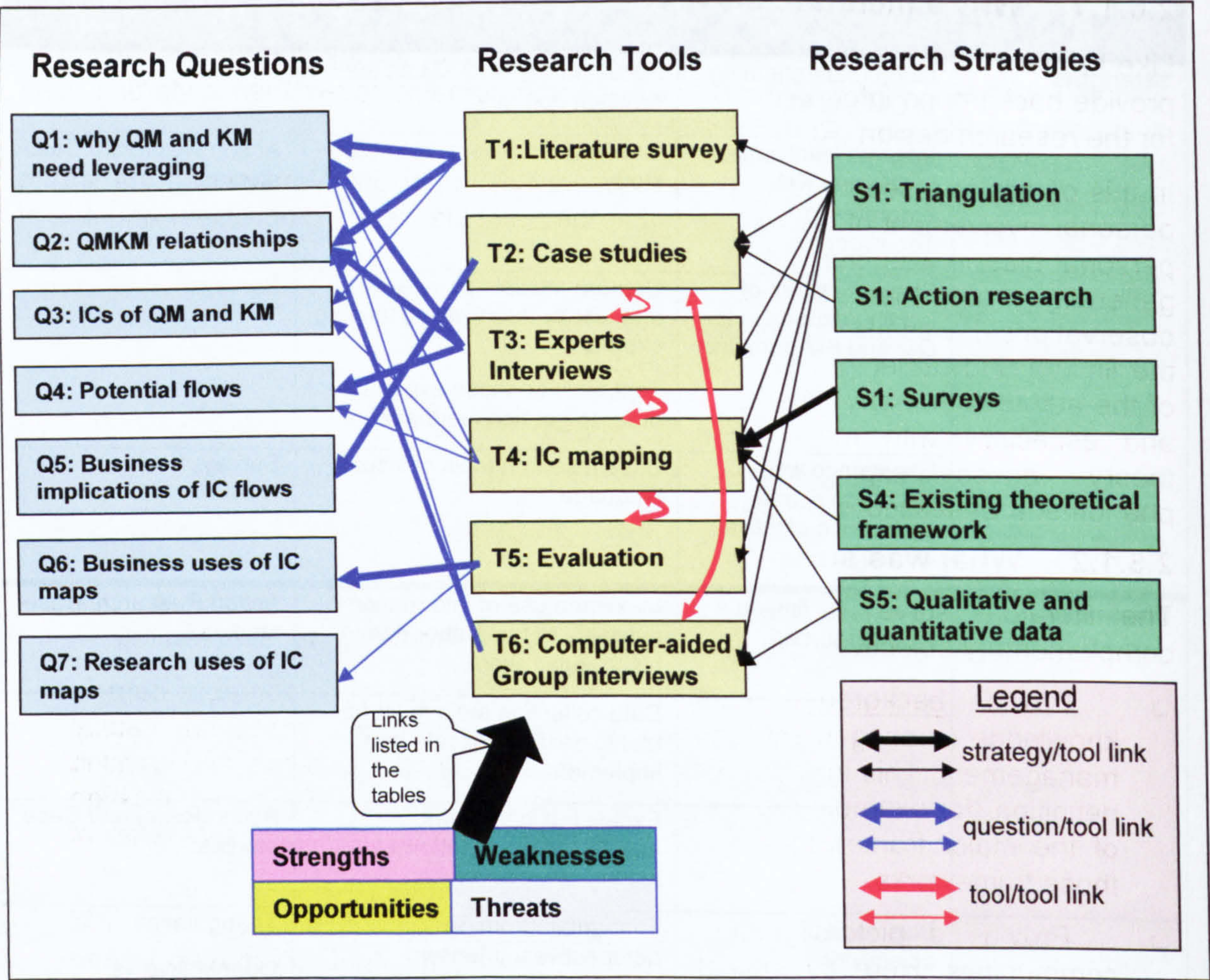


Figure 2-1: Research tools and research strategy

## 2.6 Research tools

The research strategy was implemented by using five research tools.

In this section each tool is described and the reason why they were chosen explained, also how they were used, what the problems associated with the tools were and which countermeasures were taken in order to minimise them.

The following tools were used:

- ☐ Literature Survey
- ☐ Experts interviews
- ☐ IC mapping (Self assessment)
- ☐ Computerised focus groups
- ☐ Case studies

In the next section these tools will be integrated into a coherent research plan.



## 2.6.1 Research tool #1 - Literature survey

### 2.6.1.1 Why a literature survey?

Like in many 'real-world' researches, the main function of the literature survey is to provide background information on the research domains rather than a starting point for the research design (Robson, 1994).

In this particular research, this tool was especially important. Considering the strong personal involvement of the researcher in the particular research problem and risk of personal bias, it was critical to validate the generality of the conclusions and observations. It was also important to enrich the limited and rather practical perspective of the author with many other perspectives, and especially with more scientific and theory based explanations to the phenomena witnessed in the case studies.



Figure 2-2: The researcher's desk: some of the raw material

### 2.6.1.2 What was surveyed?

The literature survey addresses several complementary objectives:

- ❑ Provide background about the relevant knowledge domain, namely knowledge management, quality management and intellectual capital management. This includes identification of the scope, essence and working definition (for example the non-trivial question of "what is KM"); identification of the major frameworks, identification of the most important elements of those frameworks.
- ❑ Provide a picture about the current situation of the QM and KM communities. Here the author looked for both qualitative discussions and quantitative statistics on the issue.
- ❑ Provide insights into the emerging trends related to QM and KM.
- ❑ Provide information about the problems that each community faces – this would represent improvement opportunities and identification of common root causes to those problems.
- ❑ Provide ideas about possible relationships between QM and KM, in order to support the main hypothesis of this research.
- ❑ Explore possible uses of the IC model, as preparation for the attempt to use it to map the IC of communities.
- ❑ Some peripheral issues, which are relevant to the research, have been briefly surveyed – for example organisational politics.

### 2.6.1.3 Where and how?

The literature survey used several sources of information – which complemented each other and together provided rich information on the surveyed issues:

- ❑ The classical textbooks about KM, QM and IC, written by the established scholars in each area and encompassing the main body of knowledge on them. Here books by scholars were surveyed such as Deming and Juran (QM), Nonaka, Davenport, Wijn and Amidon (KM), Edvinsson and Roos (IC). Other books that highlight different aspects complement the classical books.



- **Articles** from hosts of scientific and professional magazines and conference proceedings about the required knowledge domain. Here, the on-line search capabilities of the research community were instrumental. Here very focused search criteria such as "QM and KM", or "QM and failure factors" was applied.
- In particular **two journals** have been scanned carefully year by year, issue by issue, in order to track any hints about the relationships between QM and KM and emerging trends. One journal represents the mainstream thinking in quality, and the other represents the current KM practice (Quality Progress and Knowledge Management Review).
- **Word Wide Web Internet search** provided access to many other information sources with varying levels of quality, such as white papers of technology suppliers and consultants, and virtual discussions within virtual professional communities, articles of virtual magazines etc. Although not always scientifically rigorous, this information was valuable in representing opinions of the members of the QM and KM communities. Special focus was put on KnowledgeBoard, the very active site of the European KM community that is funded by the European Commission. Here any direct or indirect reference to QM was looked for, as an indication for how the KM community perceived QM. For the same reason several sites of QM communities were searched thoroughly, such as the site of the American Quality Association.

The keywords search mechanism was used as a guiding tactic to locate relevant literature. Using both single keywords (e.g. "Knowledge Management", "Quality Management") and combination of keywords (e.g. "Knowledge Management and Quality Management", "Knowledge Management" and "Fad" etc.). Other researchers were monitored using the frequency of appearance of certain keywords as an indicator to some of the explored phenomena (e.g. the rise of KM).

#### **2.6.1.4 Difficulties and constraints**

**Terminology:** There is significant confusion in terminology in the explored domains, namely Quality Management and Knowledge Management. For example, the distinction between QM and TQM is a blur (Van Ewyk, 2002). The simple critical task of identifying one working definition of KM is not a trivial one, when there are hundreds of conflicting definitions in the literature (Perkmann, 2002).

**Maturity:** the field of KM is an emerging one. There are many information sources about the KM domain, but few are scientifically rigorous and many are infected by commercial interests. For example, there are many articles about the overwhelming success of KM. Consultants and technology suppliers trying to establish their business domain probably write most.

*Countermeasure:* being aware of the phenomena, and providing the appropriate emphasis to each source.

**Lack of information:** the core issue (for this research) of relationships between QM and KM is that it is hardly referred to. Even when there is reference to the relationship, it is usually very brief. The survey did not locate any serious research into the subject.

*Countermeasure:* to put more emphasis on the other data collection tools when dealing with the above subject.



## 2.6.2 Research tool #2 – Case Studies

### 2.6.2.1 Why case studies and action research?

*“Case study is a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context, using multiple sources of evidence” (Robson, 1994).*

In the context of this research, it is believed that an in-depth observation of the life of QM and KM communities in a real organisational environment would provide interesting insights about the challenges, problems and difficulties they face. The opportunity to explore the relationships between such communities would provide even more direct insights about the main hypothesis of the research. Considering the small literature sources about this subject, the case study tool is even more important.

The surveying methods used collected data on **perceptions** of professionals about the research questions. The case study method contributed insights into what people are doing, not only on what they think (or worse, say they think).

An additional reason to include case studies in the research program was its effectiveness in the case of part time research. It provided an opportunity to use the regular work of the author to support the research. The researcher had good access to relevant documentation and of course observation did not require any additional effort.

The two case studies fall, at least to some extent, into the category of action research, as defined in the previous section. The researcher was involved in a planned attempt to improve the practice of the research subject (namely co-operation between QM and KM).



Figure 2-3: Case studies

### 2.6.2.2 What was explored?

The case studies were used to collect information about the following questions:

- ❑ What is the current situation of QM and KM communities (strengths, impact, sustainability etc.)?
- ❑ What are the specific problems that each community faces?
- ❑ What are the relationships between QM and KM communities in a specific organisation? What blocks/enhances the actual co-operation between them? How do they react to an attempt to increase such co-operation?

### 2.6.2.3 Where and how?

Hakim (1987) categorises case studies into five groups: Individual case study, set of individual case studies, Community studies, Studies of organisations and institutions and studies of events. One organisational case study was conducted, and one event case study.

**The first case study** was about the QM and KM programs within TechCom. It covered the period between 1993 and 2001. During that time the author was a TQM engineer and vice quality manager of the company, and later became the knowledge manager of the company, while continuing to work as quality infrastructure manager. In this case study the earlier interventions of the author toward co-operation between



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QM and KM community were not as a result of the research but as part of his professional responsibilities and beliefs.

**The second case study** was the 1999 Israel National Quality conference, where the author was responsible for the conference program. (In case study 1 the intervention of the author was part of his professional responsibility but at the same time was planned to provide evidence for the research hypothesis). In following years the author also participated in the Israel National Quality conference as a steering committee member and leader of the KM track – this enabled him to continue the efforts to influence the QM/KM co-operation and to observe the results.

#### **Data collection methods**

In both cases similar data collection methods were used: observations (where the researcher acted as “participant observer”) and document analysis. Since some of the experts that were interviewed, as part of the IC mapping survey, were relevant to both or one of the case studies, interviews as the third data collection can be counted.

#### **2.6.2.4 Difficulties and constraints**

**Bias:** In action research, when the researcher is involved in the case, there is a serious risk of personal bias (Robson, 1994). The conclusions might be biased. This is especially true in the case of this research, where, from the researchers' perspective, the passion for the subject is strong and proving the validity of the hypothesis is so important.

Countermeasures:

- balancing the conclusions from the case studies where the researcher was involved (1 and 2) with case studies where the author was an observer (case 4, and case 3 to some extent).
- complementing the information from the case studies with information from other sources.
- seeking the perspectives of different stakeholders involved in each case (e.g. in TechCom case, talking with both QM and KM people).

**Limited applicability:** the findings might be applicable to the case study, but not to the general situation (Robson, 1994). For example, it might be that the conclusions are true for Israeli companies, but not relevant to European or American organisations, due to significant cultural changes.

Countermeasures:

- Collecting information from many cases through a literature survey.
- Interviewing experts and QM/KM professionals from other countries.

**Fragmented and partial observations:** a case study is not conducted in laboratory conditions (Robson, 1994). Therefore it is difficult to isolate all influencing factors (and in a dynamic real organisation there are countless influencing factors). Also, some of the evidence is only indirect.

Countermeasures:

- Complement the rich observations from the case study with more direct but “sterile” evidence from the IC mapping tool.



## 2.6.3 Research tool #3 – Interviews

### 2.6.3.1 Why interviews?

One of the surveying tools used was the expert interview.

The Interview is a kind of conversation; *“which is initiated by the interviewer for a specific purpose of obtaining research-relevant information and focused by him on content specified by research objectives of systematic description, prediction or explanation”* (Cohn and Manion, 1989, cited by Robson, 1994). It is a flexible and adaptable way of finding things out. This technique was included in the plan since it



Figure 2-4: A typical interview?

was thought that it would lead to rich and highly illuminating information on relatively complex problems. The availability of contacts with some leading experts in the explored areas was another consideration. The ambiguity around some of the terms used in the research was another contributing factor to the decision: it was thought that some of these issues must be clarified in a face-to-face conversation before those experts could “intelligently” refer to them. Therefore, interviews were favoured over alternatives such as written questionnaires.

### 2.6.3.2 What was explored?

The interviews addressed the following issues:

- ❑ The situation of the QM and KM communities – problems, challenges, strengths.
- ❑ Potential synergies between QM and KM communities.
- ❑ Feedback on the IC Mapping tool – problems, potential improvement, possible uses.

### 2.6.3.3 Where and how?

The interviews were fully integrated with the IC Mapping sessions (presented in the next section). The same people who filled in the maps have been interviewed. The approach of a semi-structured interview was used (where the interviewer prepares a set of questions, but is free to modify the questions or even the interview flow in response to the answers). The procedure is described in Chapter 7 (IC Mapping methodology).

### 2.6.3.4 Difficulties and constraints

The lack of standardisation implied in face-to-face interviews raises concerns of their reliability (Robson, 1994).

Countermeasure: using identically planned semi-structured interviews for all interviews, trying to enjoy both worlds: on the one hand some level of standardisation of the questions, and on the other hand enough flexibility to enable exploitation and follow interesting leads were raised by the interviewee.

Many of the interviewees have long-term relationships with the author. There is the risk that some of them answered some of the questions so that they support the opinions of the interviewer (as they guessed them).



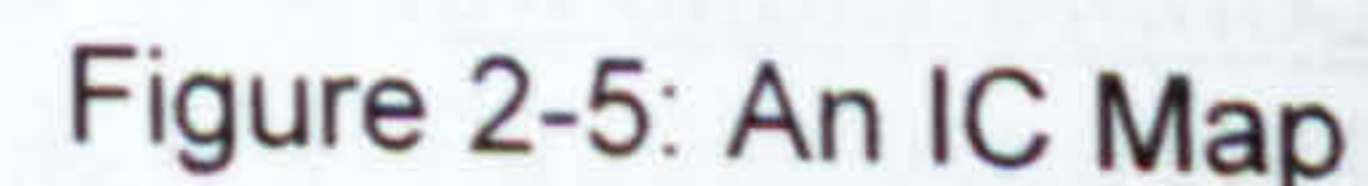
It might be that some interviewees tended to give “politically correct” answers (i.e. it is politically correct to seek maximum synergies and co-operation between QM and KM communities). Some interviewees provided “testimony” about the strengths and weaknesses of a community they led, and therefore felt partially responsible for the achievements or drawbacks. This factor also threatened the objectivity of the answers.

*As previous point: the interview interactions were also based on the IC Mapping tool results. They led the interview more than (potentially leading) questions by the interviewer. To some extent, this increased the objectivity level.*

Interviews are time consuming – the “selling”, scheduling, actual interviewing, coding of answers and analysis of them requires a great deal of time.

#### 2.6.4 Research tool #4 – The IC Mapping tool

The IC Mapping tool is a methodology developed by the author to rapidly assess the Intellectual Capital of communities, and to identify potential flows of ICs between the assessed communities. As already mentioned, the IC concept was chosen as the theoretical framework for the research. Although far from being a de-facto standard in assessing the situation of complex organisational entities, the IC model does gain popularity and recognition and attracts considerable scientific research. As such, framing the research question in this model p communicates the research problem and concludes



- Its capacity to provide direct evidence about the research questions – or at least direct recording of the perceptions of relevant stakeholders. It provides clear, explicit and quantitative but somewhat synthetic



evidence, which complement the vaguer, but real, insights collected from the other sources. The visual results can be easily communicated to interviewees, and the individual maps can also be aggregated to provide a general picture.

- One of our research strategies was to support the qualitative data with quantitative data – and this was realised through the IC maps.
- The IC maps, which are based on self-assessments, can be used in a number of ways as part of an improvement plan concerned with a professional community. Thus, they can serve a similar role as the Baldrige self-assessments awards, for example. This supports the strategic intention of conducting action research.

#### 2.6.4.2 What was explored?

The following issues have been explored:

- Strengths and weakness / deficiencies of each professional community, or group of communities.
- Gaps of ICs between different communities or groups of communities.
- Potential flows and exchanges of ICs between communities.

#### 2.6.4.3 Where and how?

The IC Mapping tool was used during interviews with experts involved in QM or KM communities – members, leaders, consultants or researchers. A detailed description of the procedure is given in Chapter 7.

#### 2.6.4.4 Difficulties and constraints

During the testing of the IC Mapping tool many technical difficulties were identified. Most have been corrected in an interactive process and resolved in the later versions of the tool. Those difficulties are reported in Chapter 7.

The more conceptual difficulties are the same related to any questionnaire:

They reflect only the perceptions of the assessed individual, not necessarily the reality.

Countermeasure: complement the synthetic picture gained by the IC Maps with more rich information gathered by case studies.

Results are strongly impacted by the selection of the people who filled the maps, especially when the sample size is very small (14).

Countermeasure: the small size was due to time resources considerations. There was an attempt to represent all relevant categories; QM, KM and IC people, academics, consultants and practitioners, Israelis, Americans and Europeans.

They provide synthetic and discrete representation of a very rich reality.

Countermeasure: interviewees were invited to talk about each question and the reason for choosing their answer.

The predefined IC categories force the person into a predefined model of the world that does not necessarily match his/her perceptions.

Countermeasure: interviewees were allowed to add IC categories or mark others as not relevant.



## 2.6.5 Research tool #5 – Evaluation

### 2.6.5.1 Why evaluation?

Evaluation is an attempt to assess the worth or value of some innovation or invention, some service or approach (Robson, 1994).

The reason for doing evaluation was straightforward: it would help in answering the research question concerned with business utility of the IC mapping tool (on top of its research utility).



Figure 2-6: Evaluation

### 2.6.5.2 What was explored?

The following issues have been explored:

- How much is the IC mapping methodology useful as a set of improvement-supporting functions (e.g. identification of community's strengths and weaknesses)?
- How can the tool be improved?

### 2.6.5.3 Where and how?

The evaluation was based on a questionnaire filled by the interviewees at the end of each interview (see more details in Chapter 7).

### 2.6.5.4 Difficulties and constraints

The sample size was small – only 12 people completed the questionnaire.

Countermeasure: a statistical test was applied to check the significance of results.

The respondents were asked to evaluate a 'product' created by the interviewer, which is related to them in various ways. This could have created a bias and impacted the results (scoring which is perhaps too high).

Countermeasure: conclusions on the methodology were drawn based on a combination of the quantitative data from questionnaires, the opinions expressed verbally by the interviewees and observations of the researcher during the interview (e.g. did the interviewee really identify potential flows or weaknesses by using the tools?).



## 2.6.6 Research tool #6 – computer- aided focus groups

### 2.6.6.1 What is computer-aided focus group

Focus groups are used frequently in market research. However, focus groups are also attractive to other research contexts e.g. in sociological research (Robson, 1994).

Computer Aided Focus Group is a process that intensifies interview and brainstorming sessions by providing each participant with a computer linked to a network and host. The inputs of the participants – ideas, feedback, votes etc. – are entered into the system and immediately displayed to all other participants. This enables a **parallel** contribution of ideas, as opposed to the **linear** process in normal brainstorming.



Figure 2-7: The computer- aided focus groups

### 2.6.6.2 Why focus groups, and why computer-aided focus groups?

Focus groups were chosen for several reasons:

- ☐ Focus groups are useful to study established groups.
- ☐ Focus groups enable the collection of data from large numbers of people, thus compensating for the relatively small sample of expert interviews.
- ☐ The dynamics of focus groups, which enable participants to respond to and build on (or confront) the opinions of others, could provide richer information than individual interviews.
- ☐ The Quality conference provided the researcher with an opportunity for easy access to several groups.

The specific technique taken, namely the computer-aided focus group, adds additional advantages to the methodology of focus groups:

- ☐ The anonymity of responses overcomes one of the problems of focus groups – power hierarchies – which affect those who speak and what they say (Robson, 1994).
- ☐ It allows the integration of structured questionnaires and semi-structured discussion (Waethrall and Nunamaker, 1995).
- ☐ It provides full documentation of all ideas contributed by all participants, thus overcoming the recording problem usually linked to focus groups.
- ☐ Another reason for the inclusion of the tool was its availability. The author organised several computerised brainstorming sessions as part of the 99 Quality conference to discuss the future of the conference. In these circumstances, it was only natural to exploit it also for the research and add several relevant discussion topics. This enabled the author to capture the perceptions of many QM professionals.



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### **2.6.6.3 What was surveyed?**

The brainstorming surveyed about 20 issues related to the future of the QM community. The following subjects were discussed:

- ☐ What are the roles of the Quality manager in the 21-century?
- ☐ How can the QM community enhance its impact?
- ☐ Should KM be added to the QM responsibility portfolio? Should the quality manager be nominated to "Chief Knowledge Manager"

### **2.6.6.4 Where and how?**

The brainstorming sessions were embedded in workshops held during the 1999 Israel National Quality conference. There were four 90-minutes brainstorming sessions. 68 professionals, of whom 51 were part of the QM community, participated in the workshops. Detailed description and results are given in Chapter 9.

### **2.6.6.5 Difficulties and constraints**

- ☐ The tool was used only in the Quality conference event. Therefore, it reflected mostly the opinions of the QM people. It would have been preferable to use it symmetrically, i.e. to run the workshop also with an audience of KM professionals, in order to get their perspective on the QM/KM relationship and the future of KM. However, due to the cost of organising a second workshop (including hiring the system and flying the Hardware, Software and technicians again from Denmark) this was not possible.
- ☐ The tool was used in 1999, when the identification of the research questions was at an early stage. Therefore, the tool was applied only to some of the final research questions.
- ☐ Due to technical reasons, the sessions were conducted in English, which is only partially mastered by some of the participants. This slowed down the process of keying in of ideas.



## 2.7 Research Flow

### 2.7.1 A linear model of the research program

The research program is composed of eight phases, described in the following flow chart.<sup>3</sup>

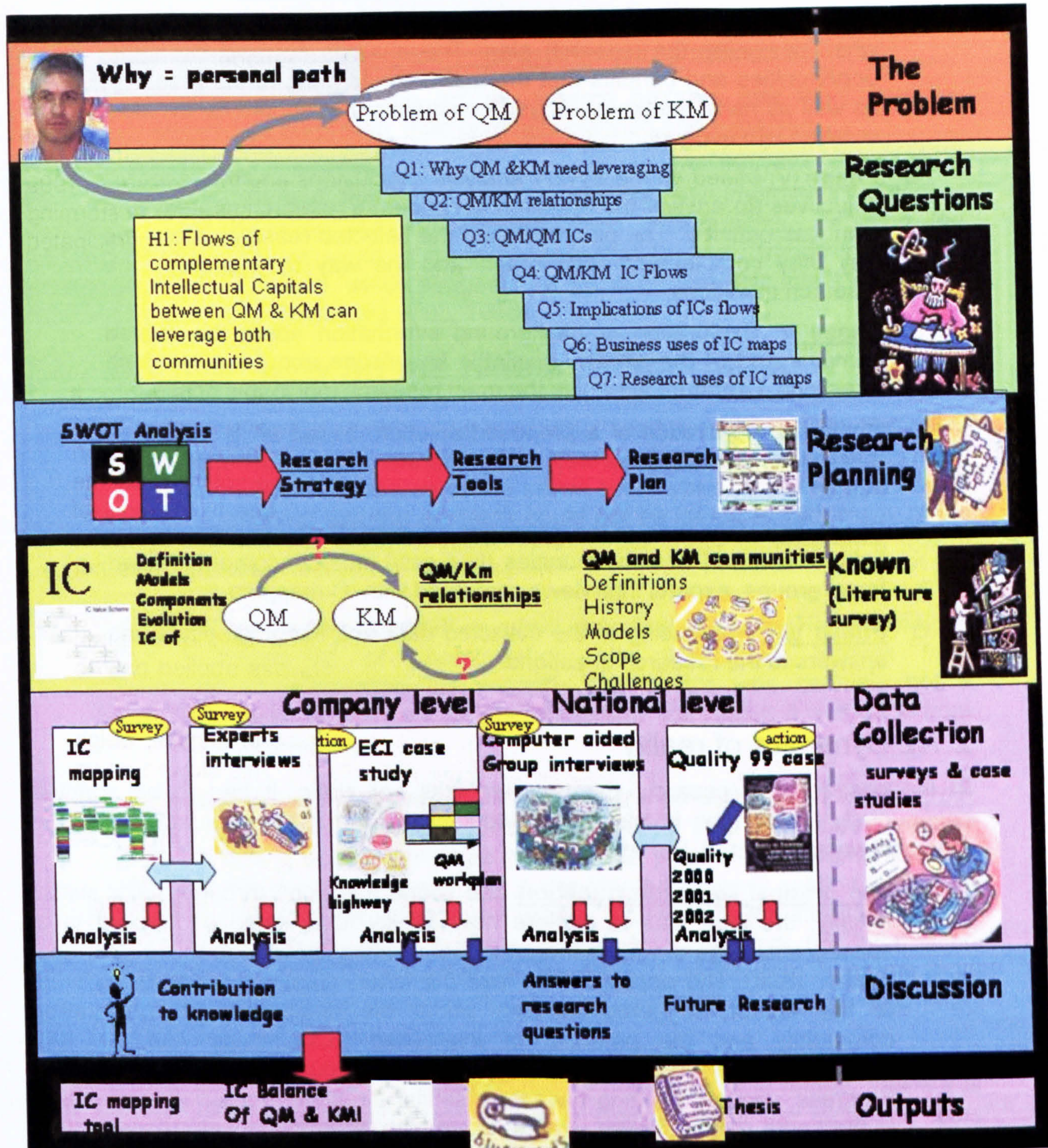


Figure 2-8: The research plan

<sup>3</sup> This is the final version and the actual plan used in the research. An earlier version is presented in the cover page of this chapter. Although it is the same in general, there have been some changes to the original plan.



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## Research plan's phases

- **Phase I:** Rough identification of the research problem. The selection of the research domain and specific problem was highly influenced by the background of the researcher.
- **Phase II:** Preliminary identification of the research questions.
- **Phase III:** a SWOT analysis of factors that need to be considered when designing the research plan. The analysis covered strengths, opportunities and benefits that the author could bring to the research, as well as risks, weaknesses and constraints that should be avoided, or taken into account.
- **Phase IV:** based on the SWOT analysis conclusions and the research objectives (to answer the research questions) a research strategy and plan was outlined. The plan specified the selected research tools, the way they complement each other, and the way they address the research questions.
- **Phase V:** Exploration of background information about the related domains and of the already available knowledge about the research questions. Literature survey is the main research tool in this phase.
- **Phase VI:** generation of a proposed solution, based on the selected theoretical framework as well as the literature and experience of the author.
- **Phase VII:** Validation of the proposed solution. Data collection at the field, of QM and KM communities (two case studies, computer-aided focus groups, experts interviews combined with IC mapping).
- **Phase VIII:** Processing of the collected data and integration of it into answers to the research questions.

### 2.7.2 Dynamics of reality

In the case of the research, the program was not static. It had to be adapted continuously to changes in the environment where the researcher acted and the research was conducted. For example:

- **The original research question** and scope has gone through major shifts. Initially, the idea was to explore how quality tools could be applied to a specific challenge of KM: management of existing knowledge reuse (Dvir and Evans, 1998). The opportunity to lead the Israeli Quality conference, offered to the author, triggered thinking about the challenges of the quality community and the potential of interesting relationships with the KM community. This was enhanced by a second stimulus, an article in Quality Progress, vaguely pointing towards a similar direction, published incidentally in the same month. These events, along with other influences, triggered the author to shift into the current research question.
- **The conceptual framework** of the research also shifted due to a random meeting with one of the world pioneers in the area of Intellectual Capital.
- **The original portfolio of case studies** was changed – for example the NIMCube case was eliminated, when the project shifted to new directions, which made it irrelevant to the research. Another case was added at a later stage, in response to a new business assignment with a client.



- ☐ The original IC Mapping tool was changed several times in response to feedback from the early users.
- ☐ The list of the research questions was expanded in response to responses of several interviews to the IC mapping tool.
- ☐ The original list of interviewees was modified several times, due to new contacts created throughout the validation phase.
- ☐ Some of the data analysis techniques emerged spontaneously.

These modifications show that the actual research program was more iterative, exploratory, sometimes surprising, than originally planned and expected.

The benefits of using a relatively dynamic approach towards the research program are significant. It enabled the researcher to continuously improve the plan in response to the on-going learning and emerging opportunities. Adopting the language of the business world, it could be said that the new trends in strategic management were followed, which suggested a focus on strategic intent more than on firm strategic plans (Mintzberg *et al.*, 1998).

## 2.8 Another view on the research approach

Towards the end of the research period, the author read a classic article describing the "seven faces of research" (Eilon, 1975). It was interesting, in a retrospective fashion to try to match this research to the seven archetypes proposed by Eilon. It was surprising to discover that the research could not be identified with many of the seven archetypes but the research does demonstrate some features of a few of these archetypes:

- ☒ *"The Chronicler regards himself as a true detached observer. He also may be called anthropologist or photographer. He assiduously refrains from commenting or interpreting the record":* The author was certainly not a detached observer. When he was "photographing" the reality, it was done from a specific standpoint.
- ☒ *"The Classifier does not concern himself with the collection of information, but with the organisation and categorization of data that have been already gathered".* This is only partially true for this case. A lot of new information was collected in the validation phase, but in the literature survey section (Chapters 3-6) adding value to the information already available in the literature on QM and KM was done, by creation of new schemes to catalogue this information and by populating them. For example, the QM/KM relationship spectrum is an example of how available information can be classified and re-arranged in an insightful way.
- ☒ *"The Dialectician aims at objectivity, but he believes that in human affairs it is necessary to debate and argue issues in order to elicit the facts...he feels completed to unsettle the system by challenging stated views".* In this research there was a clear opinion about the research question and its real-world implications, which was argued for (but with explicit efforts to retain a reasonable amount of objectivity).
- ☒ *"The puzzle solver is much less concerned with the mechanics and intricacies of data collection. He does not see his function to question whether he is solving the right question. His task is to find a solution that satisfies predefined conditions: prove a certain relationship, find the best strategy etc".* The author



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was not fulfilling this role. He was involved with the problem definition as much as in the solution.

- ☒ ***“The Empiricist design experiments in order to create new sets of conditions for a system under observation in order to determine the validity or otherwise of certain hypothesis”.*** The author recognised that in the case of the research domain (as in many other areas Eilon points out) it is almost impossible to create laboratory conditions. Therefore he did not attempt to conduct empirical research.
- ☒ ***“The Iconoclast challenges current thinking and theories and break cherished beliefs”.*** The researcher would have liked to take the position of a rule breaker and revolutionary leader. Unfortunately, this desire was not realised in the current research, which was very much about augmenting and justifying some conventional theories (e.g. on the importance of co-operation).
- ☑ ***“The Change Agent prime objective’s is to change a given system, not by merely studying it and proposing in a consulting role how it could be altered but by being part of the system”.*** The author was certainly in this position. He belonged to the explored communities, and tried to help them improve their performance.

In conclusion out of Elian’s (1975) seven faces, the author can identify mostly with the “classifier”, “dialectician” and “change agent” roles. Awareness to this situation enabled him to take some countermeasures to avoid the risk of subjectivity.

## 2.9 Conclusions

**The drivers for the research** – in this Chapter the reasons behind the desire of the author to move from intuitive business treatment of the QM/KM problem into a scientific approach has been discussed.

**A SWOT analysis** has revealed the “benefits” which the author could bring to the research project and the risks and threats that challenge the research.

These factors have directly impacted the design of the research program. To neutralise the problem of limited time resources, a characteristic of part time research, the author emphasised the intensive use of information and opportunities available to him in the course of regular business. Even more precisely, the *first* guiding principle was to turn the business work of the author from a weakness into an advantage – by making the research link very closely to the working world.

**Examined separately**, each research tool, which forms part of the strategy, suffers from some constraint and poses significant risks. The author identified and applied partial remedies and countermeasures to minimise those risks. It is the combination of the tools, which makes a strong research strategy. Each tool complements the other tools, making up for some of the weaknesses in each and provides added value. Together they provide many perspectives to the same problem and a basis for triangulation of the findings. This complementary nature of the chosen research tools is the *second guiding principle*.

A more thorough after-action observation of the research program shows that it is **not a liner and sequential program** carefully designed from the outset based on the above design principles. Since the research took place in a real world, where circumstances are continuously changing, the program was dynamic, iterative, and influenced by the research environment.



To conclude this chapter, a list of features considered to characterise successful research is reviewed. This list is taken from the textbook 'Real World Research' (Robson, 1994). The author has shown in this chapter that the research question and plan meets each of these criteria:

- ☑ ***“Activity and Involvement – good and frequent contacts both out in the field and with colleagues”***. The author was involved in the QM and KM communities for almost ten years, and was active in the activities of these communities in a company level, national level (Israel) and to some extent international level (active in the EKMF – European KM Forum).
- ☑ ***“Convergence – coming together of two or more activities or interests”***. The research is based on a convergence of issues that have arisen around two communities. The introduction of the IC concept adds to the convergence aspect. The “research puzzle” presented in the “Introduction” chapter visualises this convergence.
- ☑ ***“Activity and Involvement – good and frequent contacts both out in the field and with colleagues”***. The author was involved in the QM and KM communities for almost ten years, and was active in the activities of these communities in a company level, national level (Israel) and to some extent international level (active in the EKMF – European KM Forum).
- ☑ ***“Convergence – coming together of two or more activities or interests”***. The research is based on a convergence of issues that have arisen around two communities. The introduction of the IC concept adds to the convergence aspect. The “research puzzle” presented in the “Introduction” chapter visualises this convergence.
- ☑ ***“Intuition - Feeling that the work is important, timely, ‘right’ (rather than logical analysis)”***. The author has genuine desire to contribute to the QM and KM communities’ performance, and the research is one form of input towards this desire.
- ☑ ***“Theory - concern for theoretical understanding”***. The “discovery” of the IC concept by the author and the insight of its potential relevancy have contributed to the theoretical foundation for the work.
- ☑ ***“Real world value- problem arising from the field and leading to a tangible and useful idea”***. The problem explored in the research is real and significant – it has implications both to the performance of the organisations, where the QM and KM communities operate, and to the members of these communities.

In conclusion it is believed that the conditions for successful research have been met. The remainder of the thesis will focus on how the research was actually conducted and what was learned.



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## 3 Quality Management

### 3.1 Aims

The research focuses on the potential interactions between two professional communities.

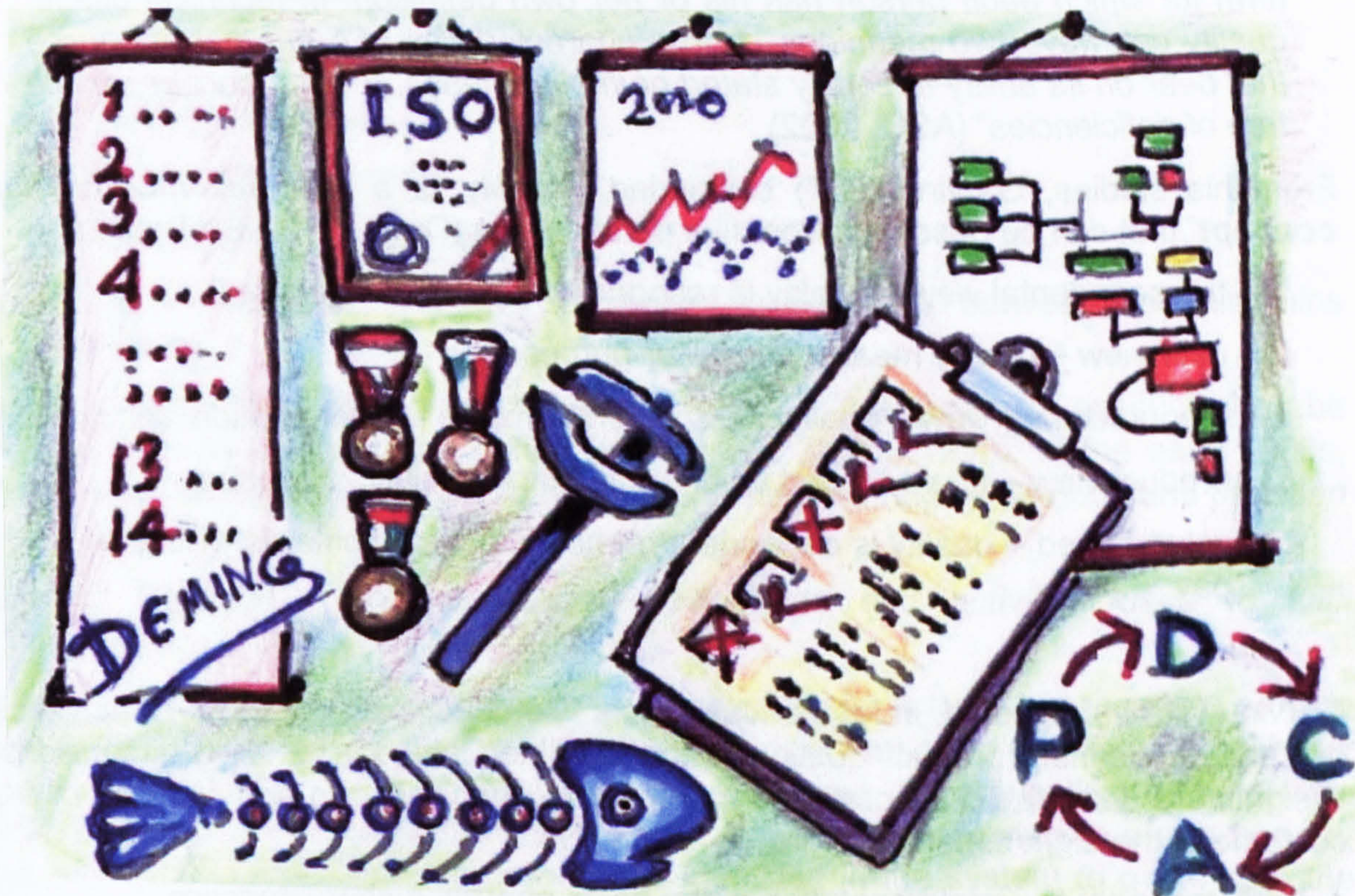
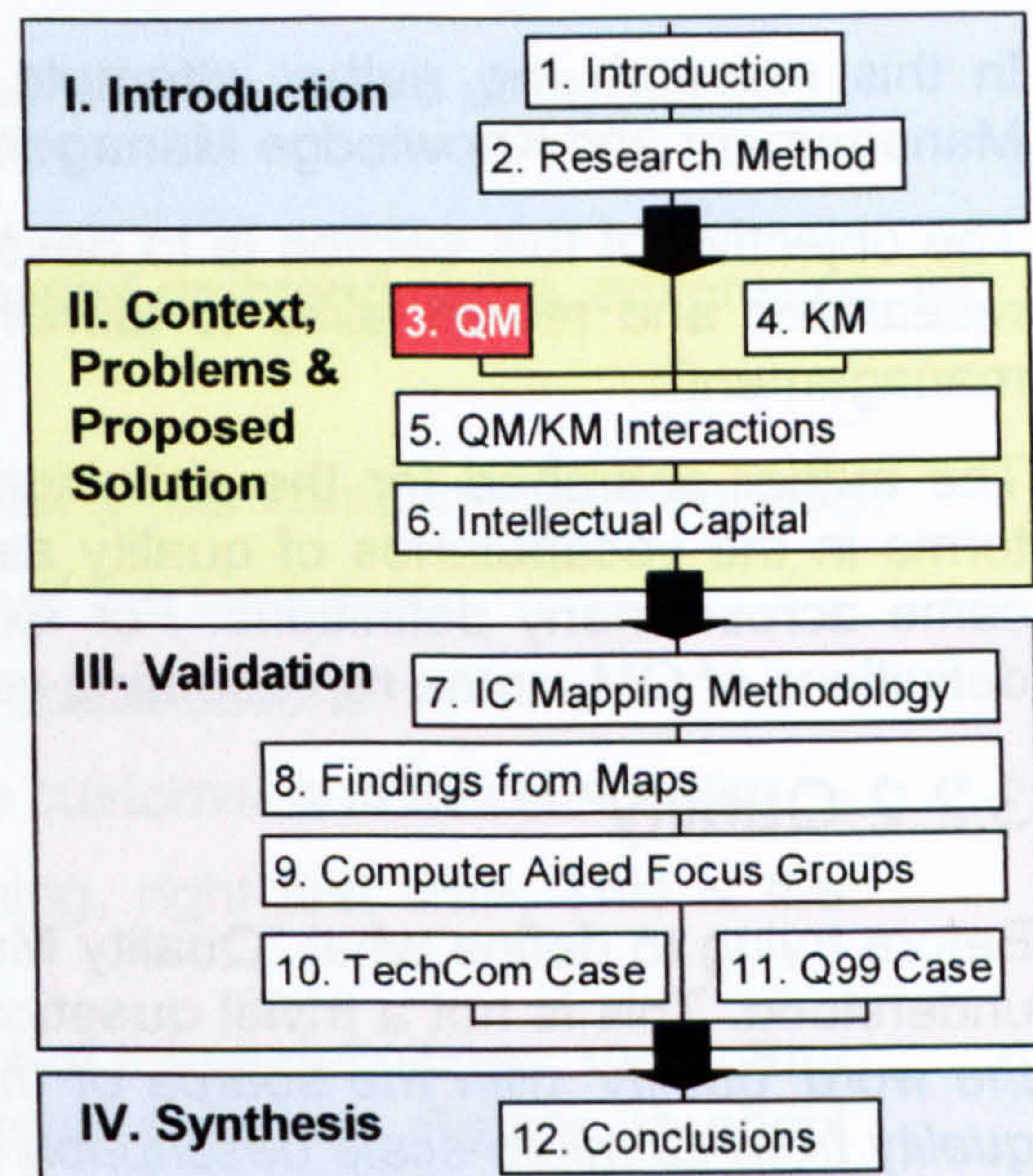
This chapter provides the context and required background information for the first community, namely the Quality Management community.

The chapter relates to the first research question:

**Q1: Why do the QM and KM professional communities need to improve?**

At the end of the chapter the reader will understand:

- What Quality Management is.
- What the Quality Management community is and who belongs to this community.
- What the concepts, methods and tools used by the Quality Management communities are.
- What the challenges of the Quality Management community are.
- The trends that have impacted the development of the Quality Management movement.



Quality Management – some tools



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## 3.2 What is Quality Management?

### 3.2.1 Definitions

In this research the author attempts to explore the interactions between Quality Management and Knowledge Management. But what is “Quality Management”?

The objective of this section is to develop an operational definition that will help the researcher and reader alike to identify what is included in the domain of “quality management”.

The author searched for the definition of quality, quality management and related terms in the vocabularies of quality associations or in scientific papers. The author came across many definitions. For example, the author found more than a dozen definitions of QM, some representing very different approaches.

### 3.2.2 Quality

Before trying to define what “Quality Management” is, the term “Quality” needs to be understood. This is not a trivial question: *“Confusion has surrounded the meaning of the word ‘quality’ with the source of the confusion perhaps lying in the evolution of quality from its micro-scale description of a product to its more contemporary macro-scale description of an organisation”* (Dalrymple et al., 1999)

Out of a large number of definitions of quality, the author chose to firstly give a general definition, and then to present several ways to deconstruct the term into its building blocks, alternatively referred to by various writers as “views”, “dimensions” or “aspects”.

The American Society for Quality (ASQ) defines quality as

*“The totality of features and characteristics of a product or service that bears on its ability to satisfy given needs or customer requirements. It is a subjective term for which each person has his or her own definition. In technical usage, quality can have two meanings: 1. The characteristics of a product or service that bear on its ability to satisfy stated or implied needs. 2. A product or service free of deficiencies”* (ASQ, 2002)

From his studies, Garvin (1987) concluded, **“quality is a complex multifaceted concept”** that can be described from five perspectives (Dromey, 1998). These are:

- ☐ transcendental view – quality is recognisable but not definable
- ☐ user view – quality means fitness-for-purpose
- ☐ manufacturing view – quality means conformance to specification
- ☐ product view – quality is tied to inherent characteristics of product
- ☐ value-based – quality is dependent on how much customer is willing to pay

Garvin (1987) suggested, in his famous article “Competing on the Eight Dimensions of Quality”, defining product quality as the weighted average of all 8 dimensions. Weights are determined according to their relative importance to and priorities of the customers, the eight dimensions are:

1. **Performance**: the implementation of the basic operating characteristics
2. **Features**: extra items added to basic features



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3. **Reliability**: probability product will operate over time
  4. **Conformance**: meeting pre-established standards
  5. **Durability**: life span before replacement
  6. **Serviceability**: ease of getting repairs, speed & competence of repairs
  7. **Aesthetics**: look, feel, sound, smell or taste
  8. **Perceived quality**: subjective perceptions based on brand name, advertising, etc

Hari (1995) suggests defining quality by integrating four complimentary aspects:

- ☐ The marketing aspect – the satisfaction of the customer
- ☐ The technical aspect – conformance to specifications
- ☐ The economic aspect – the value to the customer and to the supplier
- ☐ The cultural aspect: doing the right thing, right first time. This is the most comprehensive aspect.

Considering the complimentary aspects of these definitions, the author decided not to reduce them into a shorter definition. Rather, to adopt as his definition a combination of the above definitions for a rich description of the meaning of the term “quality”.

### 3.2.3 Quality Management approaches

Throughout the research, the author came across several terms that describe management and professional domains related to quality. Although they represent a historical development in the domain, these terms are subject to many interpretations and are often used interchangeably:

- Quality Inspection
- Quality Control
- Quality Assurance
- Quality Management
- Total Quality Management

As can be seen from the following definitions, the distinction between these domains is not clear-cut.

**Quality Inspection**: Methods for the inspection of the quality of products can be tracked back to the medieval period (Kenett and Zacks, 1998). In the early 1900s, researchers at Bell laboratories developed statistical sampling methods and provided an effective alternative to a 100% inspection.

**Quality Control**: *“The operational techniques and activities used to fulfil requirements for quality”*. (ISO9000, 1987).

**Quality Assurance**: *“All those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality”* (ISO9000, 1987). Quality assurance focuses on preventing defects from occurring, instead of fixing them afterwards. Analysing every step in each process, the causes of and ways to fix defects are identified in the system to make sure the problem does not happen again. (Hari, 1995)

#### **Quality Management**



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This is the application of a quality management system in managing a process to achieve maximum customer satisfaction at the lowest overall cost to the organisation while continuing to improve the process. (AQS, 2002)

### **Total Quality Management**

The way the organisation is managed to achieve business excellence based on fundamental concepts which will include: customer focus, supplier partnerships, people development and involvement, activities managed in process terms and based on facts, continuous improvement and innovation, leadership and consistency of purpose, public responsibility, and results orientation (EFQM, 2002).

Simply put, it is a management approach to long-term success through customer satisfaction. TQM is based on the participation of all members of an organisation in improving processes, products, services and the culture in which they work. The methods for implementing this approach are found in the teachings of such quality leaders as Philip B. Crosby, W. Edwards Deming, Armand V. Feigenbaum, Kaoru Ishikawa and Joseph M. Juran (ASC, 2002).

### **3.2.4 The interactions between the quality approaches**

The literature suggests very different and sometime conflicting models of interactions between the four quality approaches outlined above. This is a relevant issue to the research, since the author needs to determine whether the area of QC, for example, is relevant to his domain.

Van Ewyk (2002) suggests in an article titled *“Quality Management Equals QA plus TQM”* that the volume of information around QM and the different terminology makes it hard to determine what exactly this term means.

*“The key to coming to grips with this problem is to first divide Quality Management as a whole into two main areas. These are Total Quality Management or TQM, and Quality Assurance or QA. While some argue that TQM incorporates QA this is not strictly true. QA was developed for quite different motives and sponsored by a different group of people and it attempts to manage quality from a very different perspective to that of TQM. However, QA and TQM are complementary and contain few aspects which overlap or conflict. The two form a continuum of management methods in which QA covers the more rigid or formal end and TQM the more flexible and dynamic”.* (Van Ewyk, 2002)

### **A reality check**

Reviewing the definitions above, the author felt that the objective of clarifying QM was not achieved. The strategy of using the vocabularies of the QM community did not provide the author with enough understanding of the domain. Beyond the problem of disagreement between the definitions, they were too general. Therefore the author looked for alternative ways to define QM, as discussed in the next section.

### **3.2.5 Alternative Definition Strategy**

The author considered and attempted to apply several alternative ways to come to an operational definition.

**Firstly**, the author tried to use the definitions provided in the vocabularies of the quality associations, as discussed in the previous section. This option did yield a clear and comprehensive operational definition of QM.

**Secondly**, the author explored approaches of the “great quality gurus” such as Deming, Juran and Crosby, hoping that they would provide a more detailed definition of the QM domain. Although their approaches still guide a large portion of the QM community activity, the author’s attempt to use one of these approaches (or a



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combination) as a way to define QM was not satisfactory. The author found that it was not aligned with the actual agenda of the QM community.

**Thirdly**, the author considered basing the operational definition of QM on his experience. That is, to map the **actual QM program** led by the author in a specific program. The program was very comprehensive and up-to-date, and covered many areas of the QM domain. This option was ruled out for obvious reasons – as a single case, highly influenced from local factors, that does not necessarily reflect the general domain

**Fourthly**, the option of using one of the QM standards, e.g. ISO9001:2000 was also examined. Its advantage is that it is detailed and widely applied by many members of the QM community, and perhaps guides the activity of the QM professionals. The disadvantage is that the author thinks these standards are limited in scope, and cover mostly the “mechanical and procedural” aspects of the domain.

**Finally**, the author arrived at the fifth alternative, which was chosen – **to use the quality awards frameworks as a way to define the QM domain**. Several advantages of this option contributed to its selection:

- The Quality Awards are **influencing** the agenda and actual QM programs. They serve as a guide for organisations interested in implementing “proven performance excellence initiatives” (Vokurka *et al.*, 2000). Awards like the Baldrige Quality Award gradually changed their objective and significance. *“They have been evolved from a means or recognizing and promoting exemplary quality management practices to a comprehensive framework for world class performance. They now serve as a theoretical model for quality management”* (Flynn and Saladin, 2001).
- The Quality Awards **represent** the current and forward thinking of the QM community. Their frameworks are updated from time to time, in response to development in the thinking in the area. The frameworks and criteria are set and modified by committee members who come from the community and are well linked to its different sectors – academia, industries, public sectors, standard institutes etc.
- Several researchers support the use of Quality Award as *“providing a definition and description of TQM, which helps to give a better understanding and awareness of the concept”* (Wiele *et al.*, 1996).
- The quality award frameworks are based on the most **profound theories** in the area of quality e.g. those of Deming and Juran (Tonk, 2000).
- The Quality Awards are well linked to the **Quality Management standards** of organisations such as ISO. Several researchers showed the similarities between the Baldrige Award and ISO9001, 2000, for example (Tonk, 2000). This supports the utility of the quality awards as a basis for defining the QM domain.
- Out of all the definitions coming from academia, the author particularly liked the one of Dean and Brown (1994). They define quality as a *“philosophy or an approach to management, made up of a set of mutually reinforcing principles, each of which is supported by a set of practices and techniques”* (Dean and Brown, 1994). However, in order to make it operational (i.e. identify what are these principles and practices) the author needed a detailed framework. The author agrees with Sousa and Voss (2002) that the identification of what constitutes QM should be



made "at the level of practices. "Practices are the observable fact of QM, and it is through them that managers work to realise organisational improvement. Principles are too general for empirical research and techniques are too detailed to obtain reliable results" (Sousa and Voss, 2002). The author believes the quality award criteria provides a clear framework for QM practices, thus helping the author to define QM at the "right" level of analysis, and also enabling him to overcome the weaknesses of approaches I and II.

- The Quality Awards are **widely used** by large sectors of the QM community, although in the last years there is some decline in the level of participation (Pyzdek, 1999).
- And finally, a more subjective advantage: The concept of the quality awards is **well known to the author**, who guided his company to achieve the Israeli Quality Award.

The following figure illustrates how the Quality Awards are influencing and being influenced by the actual doing and forward thinking in the area of quality.

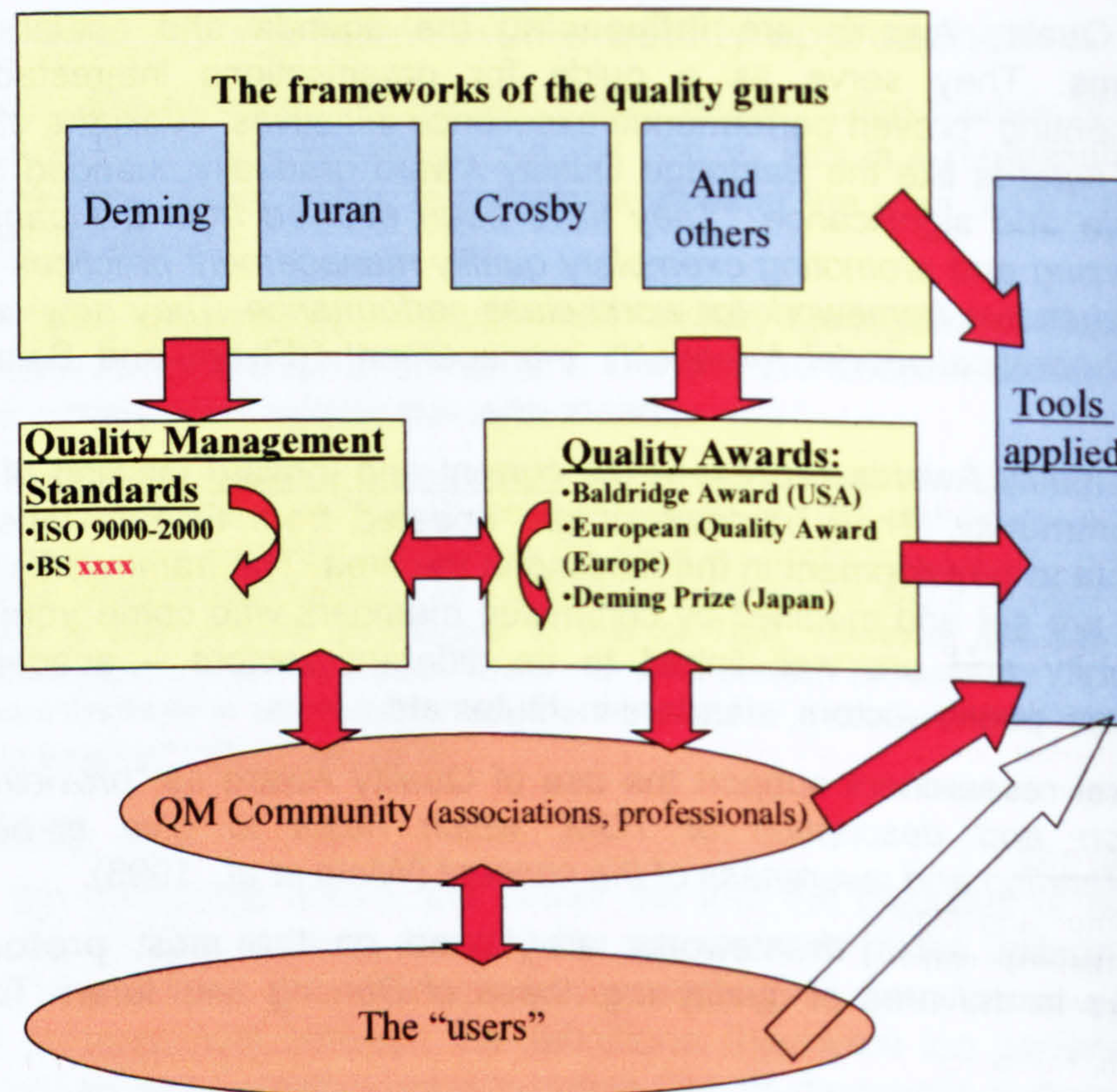


Figure 3-1: Quality Awards as a basis for the definition of the QM domain

### Which Award?

Most National and Regional Quality Awards have similar frameworks. A research concluded by the American Quality Association compared five awards: Malcolm Baldrige award (USA), the European Quality Award (Europe), Deming prize (Japan), Canadian Quality Award and Australian Quality Award (Vokurka et al., 2000). The comparative research concluded that although the awards differ on what they put more emphasis on, they all have similar frameworks and cover similar strategic areas:



Leadership, strategic planning, customer and market focus, information and analysis, human resources focus, process management and business results.

The similarity between the models is not a surprise, considering that they all draw from similar inspiration sources (as shown in the figure above)

The author chose to use the model of the Israeli Quality Award, version 2000. The first reason was that not only is he familiar with this model, but that it is also widely used in Israel, where the two case studies of this research and most of the interviews were conducted. The second reason is that this model draws from the two most common models, the American Baldrige Award and the European EFQM Excellence Model. The model of the Israeli Quality Award (version 2000) is presented in the following figure:

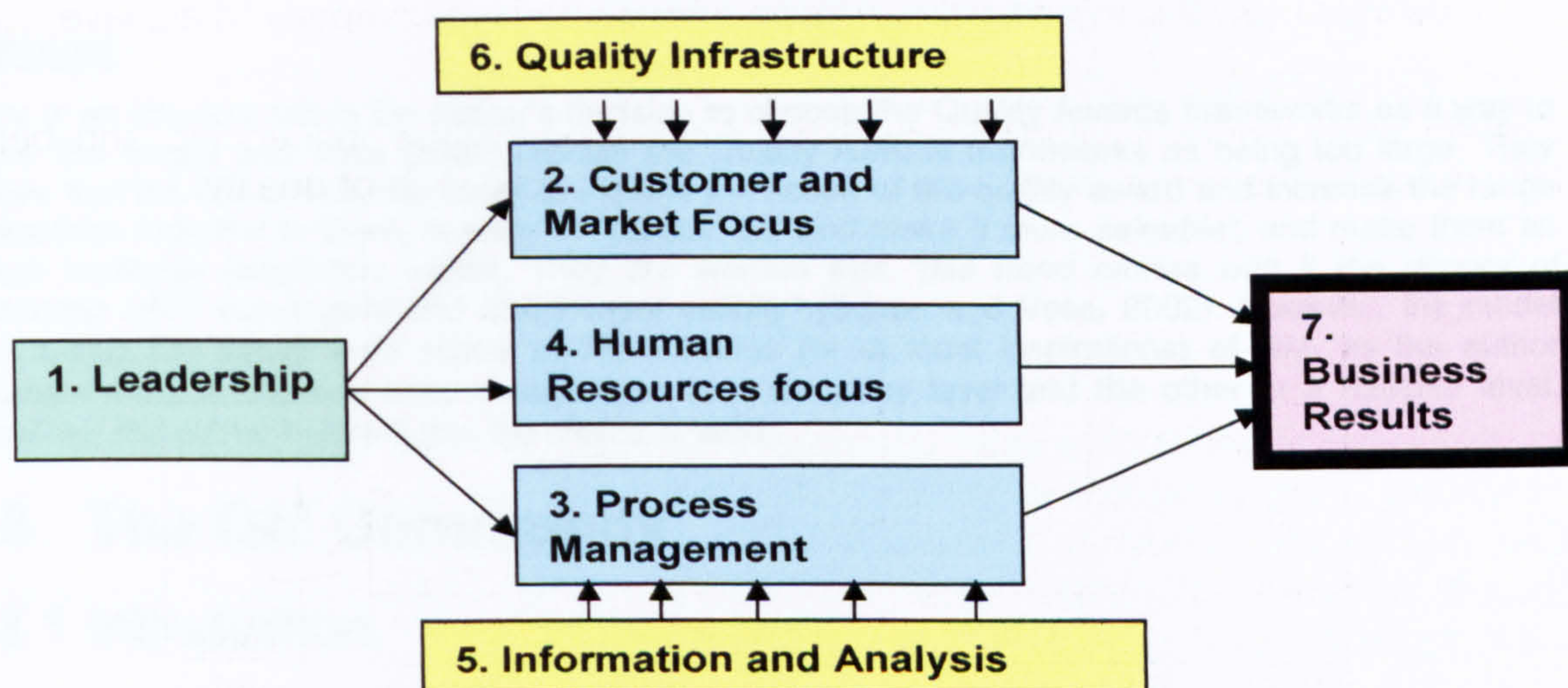


Figure 3-2: Israeli Quality Award (Version 2000)

The building blocks of the model can be classified into four logical groups:

#### The overall objective:

- ☐ **Business Results:** this category examines the company's performance and improvement in key business areas – customer satisfaction, financial and marketplace performance, human resources results, supplier and partner performance, and operational performance.

#### The Focus Areas:

- ☐ **Customer and Market Focus:** this category examines how the company determines requirements, expectations and preferences of customers and markets. It also examines how the company builds relationships with customers and determines their satisfaction.
- ☐ **Human Resource Focus:** this category examines how, aligned with the company's objectives, the company enables employees to develop to their full potential. Also examined are the company's efforts to build and maintain a work environment conducive to performance excellence, full participation and organisational growth.
- ☐ **Process Management Focus:** this category examines the key aspects of process management, including customer focused design, product and service delivery, support processes, internal customer-supplier relationships, and methods for continuous improvement.

#### The Infrastructure:

- ☐ **Quality Infrastructure:** this category examines how the organisation manages an effective organisational infrastructure for quality, its use of advanced quality techniques, its procedures, auditing, verification and measurement processes.
- ☐ **Information and analysis:** The category examines the selection, management and effectiveness of use of information and data to support key company processes and action plans.



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### **The role of the leadership:**

- **Leadership:** this category examines the company's leadership system and senior leaders' personal leadership. It examines how senior leaders and the leadership system address values, company directions, performance expectations, a focus on the customer and other stakeholders, learning and innovation. Also examined is how the company addresses its societal responsibilities.

The description of the model based on the Guide for the National Award Criteria, (ISQ, 2000) and the Baldrige Prize Guide (1998).

This section is concluded by the definition of Quality Management, which was developed according to the Israeli Quality Award model:



**Quality Management is the way the organisation is managed to achieve business excellence based on fundamental concepts and supporting methods which will include: customer focus, human resource focus, process improvement focus, fact based decisions, quality assurance processes and results orientation, guided personally by the organisations' leadership.**

It should be noted that this definition is similar of the definition of TQM as suggested by the European Foundation for Quality Management (EFQM, 2002). The author thinks that QM, as defined above and TQM are interchangeable terms. Therefore, he also included in the literature survey papers that use the term TQM (but only after the context was examined and found to be compatible with the definition of QM as outlined above).

#### **Comment:**

There is an inherent risk in the author's decision to choose the Quality Awards frameworks as a way to define QM. Sousa and Voss (2002) criticise the Quality Awards frameworks as being too large. They believe that the QM community tends to expand the scope of the quality award and increase the range of practices included in them, in order to "*repack QM and make it more saleable*", and make them an overall business excellence model. They are worried that "*this trend carries with it the danger of destroying QM's convergent and discriminate validity*" (Sousa and Voss, 2002). However, the model does reflect the actual wide scope of the activities (or at least inspirations) of QM, as the author observed them in the two case studies, one in a company level and the other in a national level. Therefore, the author believes that the choice is valid.

## **3.3 The QM Community**

### **3.3.1 Introduction**

In this section, the author describes the QM community, which is one of the subject areas of the research. The author will apply the term "QM community" to three levels:

- The global QM community and subsets such as the European QM Community.
- The National QM community
- The Organisational QM community

### **3.3.2 QM Community defined**

The term "QM Community" was mentioned in several quality related publications in organisations (Blodgett, 1998; Peters, 1996 and Rose, 2001). However, it was never precisely defined in the scientific literature or the publications of these organisations.

The community is defined by the criteria suggested by Mullins and Ingvarson (2000), listed in section 1.3.

The QM community consists of professionals whose core activity is strongly related to QM. Typically, these professionals belong to all or some of the following groups:

#### **3.3.2.1 Quality practitioners**

Professionals that perform quality related tasks as their core work. Usually, they will have the term "Quality" in their job title, e.g. Quality Managers, Quality Auditors, Quality Engineers, and Quality Inspectors etc. In many organisations, the quality practitioners are grouped in specific departments that act as one of the organisational support function (Silverman and Propst, 1996). It should be noted that there is a trend in many organisations to replace the term "quality" with broader and more



integrative ones such as "Business Excellence" or "Performance Improvement" (Dalrymple *et al.*, 1999). Therefore, the author considers professionals who have the role such as "Business Excellence Manager" to belong to the QM community.

### **3.3.2.2 Products and Service providers**

Professionals and organisations that provide quality products and services as their core products/services portfolio. For example: Quality focused consultancy; Quality Standards Certification; Training of quality methods; Quality related information systems and software

### **3.3.2.3 Academics**

Academics that explore quality related issues, as a major part of their research work, and students that take QM as their primary subject.

### **3.3.2.4 Officers and administrators**

People who lead and operate the public administration related to QM, e.g. the management and matter of quality associations, the administrators of national and regional quality awards, the personnel of governmental quality departments.

### **3.3.2.5 Other criteria**

In the lunch breaks of the quality conferences the author met people who are actively interested in the principles of the QM philosophy, and are involved in the "circles" of QM; yet do not belong to the clearly defined groups of "Quality Practitioners" or "quality suppliers" or "quality academics" defined above. Therefore the author adds a list of several additional technical "qualification" criteria, such as:

- Membership in a quality association
- Subscription to a quality periodical publication
- Regular participation in quality conferences

And finally, the author adds a "softer" and more subjective criterion: QM community members are people that *"join the community out of an 'a priori' sense of 'belonging to' or 'consciousness of kind' (Mullins and Ingvarson, 2000)*

## **3.3.3 Who is excluded?**

The above working definition focuses on individuals and organisations that practice Quality as their core activity. It excludes professionals that perform among many other activities quality related tasks. For example, the author did not count every R&D project manager as a community member, although he/she may occasionally or even routinely practice quality procedures like quality gates, quality testing etc. The notion that *"Quality is the business of everybody"* suggests everybody is responsible for quality (Smith, 2002). However, the author focuses on those whose **core** business is quality management.

## **3.4 QM Problem Validation in the literature**

### **3.4.1 Indications**

The analysis of the QM situation starts with some quantitative indicators:

- Reports on QM's usage levels
- Level of participation in quality awards



- Lots of QM related jobs
- Hype & Fad press

These indications suggest the same trend – the QM community, which was very strong in the early 90's, is showing signs of decline in the last decade.

### 3.4.1.1 Usage level

#### Bain Survey

The consultancy company Bain has run since 1993 and publishes an annual survey on the use of some 25 management tools across industries. The survey is based on responses of large groups of executives (471 in 2000, for example) from North America, Europe, Asia and South America.

According to the survey, TQM is one of the three management tools that have lost momentum at the fastest rate. Rigby (2001) who administered the survey states quite clearly: *"What's as dead as a pet rock? Little surprise here: It's total quality management"*. (Byrne, 1997).

Over the past 7 years, TQM usage dropped down from 72% in 1993 to 41% in 2000 (Rigby, 2001). Another indicator measured by the same survey is the 'defection rate', i.e. percentage of organisations abandoning the tool each year. In 2000, TQM's defection rate was 12%, above the mean rate of all management tools. It is interesting to note the satisfaction level of those who practice TQM went up.

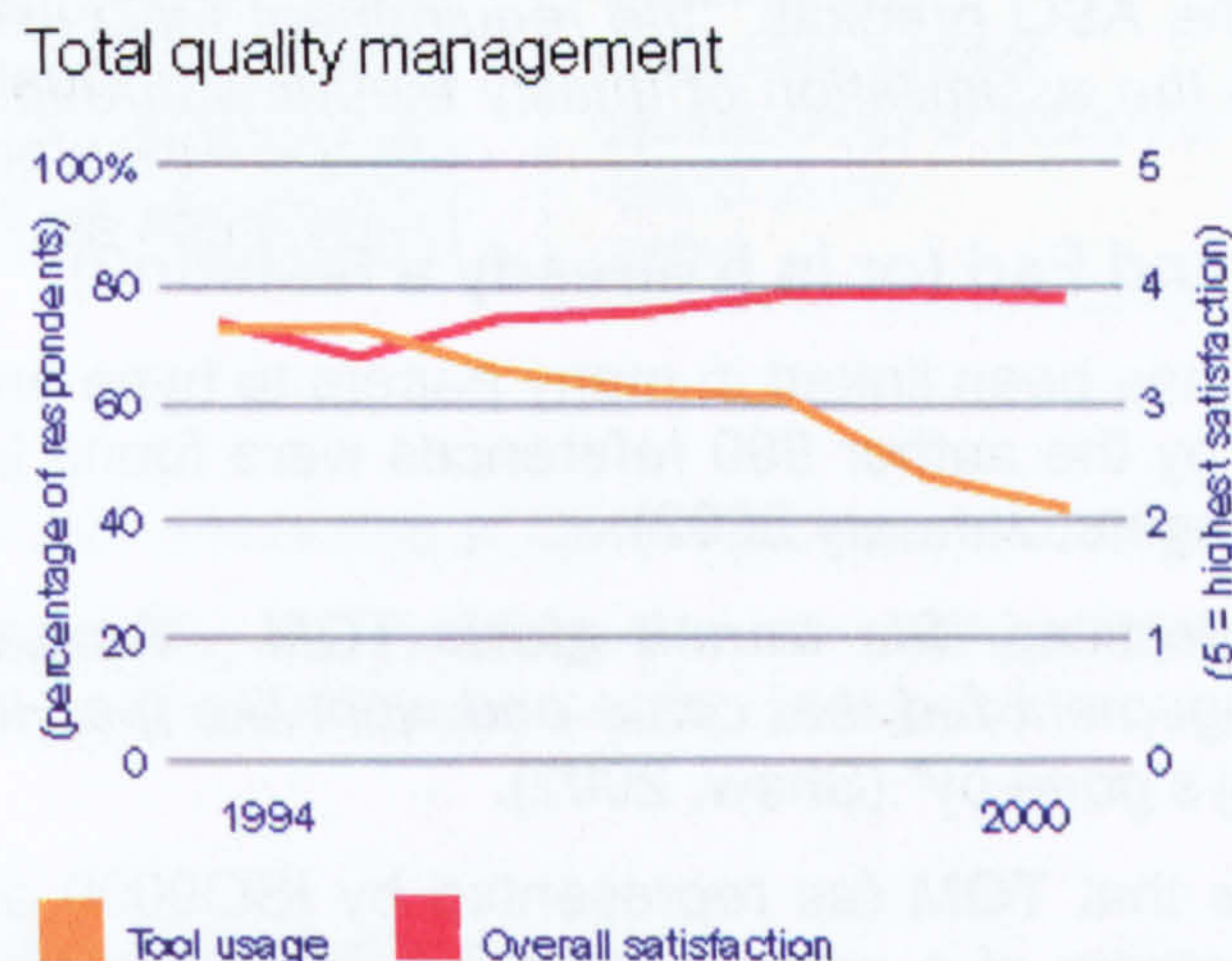


Figure 1: Bain Survey: TQM usage and satisfaction (Rigby, 2001)

Evidence on declining usage rate is provided also by other surveys. Since 1987 a group of researchers at the University of California have surveyed the Fortune 1000 companies in America, at 3-year intervals, for their use of quality initiatives and employee involvement. Analysis of the five sets of data show that companies' involvement in quality initiatives is falling after rising and peaking in the 1990s. Why are quality activities tailing off? Some of it relates to the declining use of certain approaches such as "quality circles", which is less widespread now than when the survey began. Total Quality Management was used by 73% in 1990 and by 55% in 1999. It is suggested that companies have come to see quality programmes as creating initial successes that are difficult and costly to sustain once the initiative has been around for a while (Smith, 2002).

### 3.4.1.2 Participation in Quality Awards

Organisations participate in Quality Awards competitions for two reasons:

- As a marketing tool



- As a catalyst for internal improvements process). The self-assessment reveals gaps and improvement areas, and preparation toward the competition is a vehicle to close those gaps.

The participation rate in American's most important quality award, the Malcolm Baldrige National Quality Award, has declined steadily for several years (Pyzdek, 1999).

#### **3.4.1.3 Loss of Jobs and shrinking of the community**

Using the life cycle metaphor, Larsen (2001) states that as QM arrives at 'old age', most of the community members (called 'actors' in his model) will start to leave. The number of quality managers and technicians will be reduced. Only professionals who have no other options will remain, as a hard and to a degree bitter core.

The shrinkage of some parts of the QM community has already started. An article titled "*Where will they fit in?*" reports that the traditional quality department is becoming small or disbanded. As a results quality professionals have found themselves unemployed or grouped into general work force. (Silverman and Propst, 1996).

Another indicator is the decline in the number of members of QM associations. In the last 20 years there was a 500% growth in ASQ (American Society for Quality) membership. In the late 90's this trend was reversed – and ASQ's membership has levelled of and started to decline (Pyzdek, 1999).

As the president of the ASQ predicts, "*the requirement for quality professionals will be diminished due to the assimilation of quality methods throughout all professions*" (Watson, 2000).

#### **3.4.1.4 Hype and Fad (or is it already a fashion?)**

In recent years, TQM has been linked in many papers to hype and management fad. In a literature search by the author 990 references were found linking "TQM & Fad" (Lexix-Nexix search engine, January 2002).

For example, an article titled "*Sic transit gloria TQM – Amen*" suggests that the concept was a "*management fad that came and went like the Hula-Hoop, Pet rocks and other music of days gone by*" (Shaw, 2002).

Another article argues that TQM (as represented by ISO9000 and Quality Awards) demonstrated all symptoms of a management fad, but did not pass away as many other fads – instead it sustained and became a widely implemented fashion. "*If a fad is applied in a variety of situation and seems to work, based on evidence given by those using it, the fad becomes a fashion is quickly attracts more followers and disciples. However a fashion is essentially something which remains on the surface of the organisation and does not put down deep roots, and will not change the organisation*" (Wiele and Williams, 2000). According to the authors, it is not clear if TQM will move from "fashion" into "fit"

Total quality management is widely held to have "failed" in Australia. Total Quality Management underpinned the rise of manufacturing in Japan, but its role in the new order is not so clear-cut (James, 1997).

### **3.4.2 Root Causes**

The literature research identified many attempts to explain the situation of the TQM movement.



For simplicity, the author categorised the factors discussed in the literature into several groups, as shown in the fish-bone illustration. The reality is less linear: there are many interdependencies and interactions between the factors. However, for the purpose of this research, the author thinks that the linear model presented below is satisfactory.

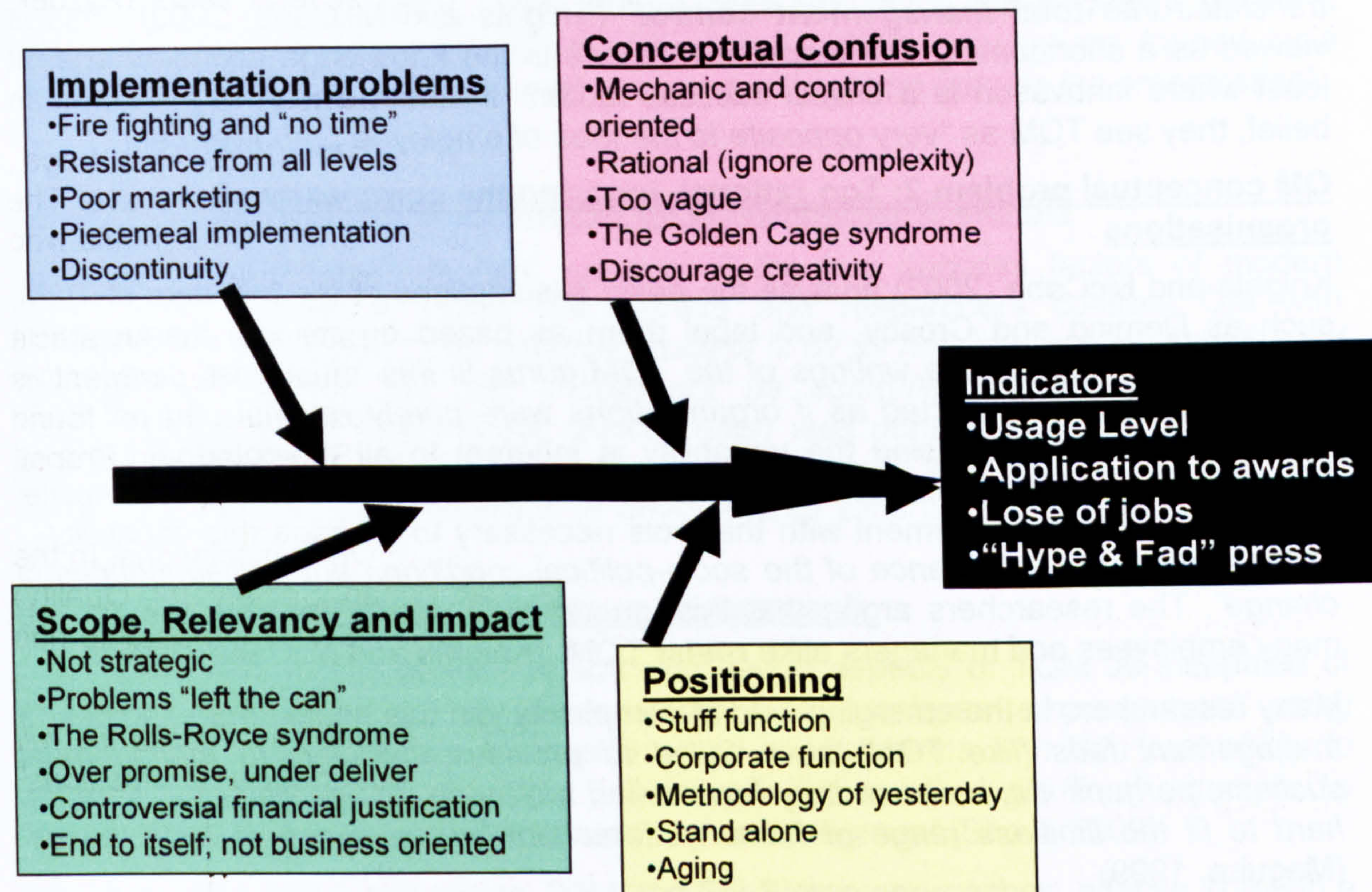


Figure 3-3:: Problems of QM – Evidence from the literature

In the following sections the author elaborates on each problem, quoting some of the writers – researchers and practitioners – who referred to it.

### 3.4.2.1 Conceptual confusion

#### QM conceptual problem 1: Too mechanistic and control-oriented

Feinberg (1998) has explored why so many managers oppose TQM. One of the major arguments for resistance is their concern that there is a risk in the attempt of TQM to formalise and design ‘everything’ as a structured and systematic processes. *“The most important things - insight, instinct, talent and creativity - do not benefit from process improvement efforts. This argument draws a distinction between replicative activities such as manufacturing and purchasing and creative activities such as design and strategy. Sophisticated managers admit a degree of fuzziness at the boundaries but nonetheless maintain that in certain situations the right “gut feelings” should dictate direction and that there are meaningful contributions beyond the reach of data and analysis”* (Feinberg, 1998).

Barth (2000) argues that TQM belongs to the mechanistic school, which is obsessed with tools and processes. *“It believes you can find a goal and define the steps required to achieve that goal over a one-, two-, three- or five-year time horizon”*.

QM is frequently praised for replacing the “old” Quality Control approach and adding an aspect of employees’ self-responsibility. Is it so? Many critics insist that TQM is



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also focusing on control, although in more sophisticated way. For example: *"Techniques such as increased surveillance and monitoring, heightened accountability, peer pressure through teams and customers, and involvement in waste elimination through continuous improvement, lead to a situation which intensifies work by eliminating 'waste' or 'slack' ... total quality control in effect translates into total management control"* (Knights and McCabe, 2002). This is viewed as a shortcoming and inappropriateness in the knowledge economy age, at least where innovation is a critical success factor. In contradiction to the common belief, they see TQM as *"very opposite to the idea of employee empowerment"*.

### **QM conceptual problem 2: Too rational, ignoring the complexity of organisations**

Knights and McCabe (2002) analyse the basic assumptions of the founders of TQM, such as Deming and Crosby, and label them as based on rational management paradigms. *"Implicit in the writings of the TQM gurus is this 'objectivist' perspective where analysis is conducted as if organisations were purely rational and politically neutral entities"*. Recognising the variability is inherent to all phenomena, Deming demonstrates a faith in rational control when he constructs his 14 points in the belief that they provide management with the tools necessary to manage this variability... *"TQM ignores the importance of the socio-political conditions and consequences of change"*. The researchers argue that this ignorance is one of the reasons why so many employees and managers alike resist TQM. (Knights and McCabe, 2002).

Many researchers in the emerging field of complexity join this attack. For example: *"if management fads (like TQM) have failed to provide the keys to management success, perhaps it is because they have relied too much on simplification, tried too hard to fit the limitless range of human interactions into a series of static boxes"* (Maguire, 1999)

### **QM conceptual problem 3: Important philosophy in a Golden Cage**

Morgan (1993) states that the TQM movement has done much to institutionalise the philosophy of promoting continuous improvement. However, this strategic development frequently runs ahead of the organisational reality. TQM has suffered badly from the tendency of current operations to get caught in patterns of single loop learning. *"Despite the outright commitment to constant improvement, many TQM programs have been caught in old bureaucratic patterns and cultural norms, leading to failure rate of over 70%"*. In his view, many of the *"QM programs became no more than programs"*, failing to create the deep cultural change and the political dynamic that supports it.

Keren (2001) has raised a red flag over the quality movement, suggesting that it has abandoned the true essence of "quality" and focuses now mostly on its rigid set of quantitative aspects and tools called by him "the golden cage of quality". He adds: *"the emancipation of quality from this cage begins with its understating as a concept that not necessarily zero into a quantitative logic"*.

Bar Dror (2002) joined Keren, raising a very similar concern: *"too many organisations suffer from the 'procedures prisoners' syndrome"*, which hinder the essence of Quality from their employees.

Certification programs such as ISO9000 are often attacked as barriers to genuine and comprehensive quality improvement. The high level of paperwork and administrative work tied to ISO9000 was perceived by many line professionals as adding little value to quality improvement (Yong and Wilkinson, 1999).

A particularly critical view of this issue is expressed by a QM professional in a letter to the editor of quality Progress: *"I perceive that the quality function is beginning to*



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outlive its usefulness in many ways. The only thing propping up the profession is the existence of increasingly complex and continually revised standards that, when taken together, constitute a separate industry. We have created an entirely new bureaucracy which continues to justify its existence" (Stratton, 1996).

Antoni (2000) also expresses a very critical voice and states that a "quality system is associated with several centimetres of business activity descriptions topped by a certificate which is supposed to function as a quality stamp outside the organisation".

#### **QM conceptual problem 4: Perceived as discouraging creativity**

Innovation and creativity is held as one of the key success factors of modern organisations. However, many practitioners and researchers contrast QM with innovation. For example: *"The creative process is by its nature a messy, chaotic and unpredictable. It can not and should not be controlled by an elite group of professionals. Nearly every great breakthrough was done without using advanced statistical methods. Creativity requires organisations with variability, slop and redundancy The quality profession is devoted with elimination of these very things"* (Pyzdek, 1999).

#### **QM conceptual problem 5: Too vague an approach**

Some business people attack the soft and vague aspects of TQM as incapable of delivering real results. *"A classic example was 'employee empowerment' using slogans, vague performance evaluations and quality teams with little real ability to influence the company's direction. Labour quickly saw through flimsy attempts by management to empower that poisoned any real progress"* (Shaw, 2002)

Pyzdek (1999), when comparing TQM and Six Sigma approaches, attacks TQM on a similar ground. *"Guidelines are so abstract that only the most gifted leaders were able to knit together a successful deployment strategy for TQM...TQM offered a mushy set of philosophical guidelines and no way to prove that one had accomplished their quality goals"*.

### **3.4.2.2 Scope, Impact and Relevancy of QM**

#### **QM relevancy problem 1: Over promise, under deliver**

Many papers echo the concerns raised by QM professionals and business practitioners: that QM has promised too much and delivered too little benefit, in terms of competitive advantage (Byrne, 1997 and Dalrymple, 1999).

Forsberg et al. (1999) report on a survey of expected and perceived effects of QM in several dimensions, e.g. "co-operation", "co-ordination" and "cost reductions". In all areas, the perceived effects have been significantly lower than the expectations. One reason might be that the expectations have been set unreasonably high when the QM programs were launched, based on anecdotes, hype and publicity (Forsberg et al., 1999 and Antoni, 2000).

Here is one typical example of the benefits promised by the promoters of QM: *"Quality Management's promise is to provide products and services which are not only be better than your competitors', but more reliably and predictably so. The result is more sales, fewer problems, less wasted time and materials, higher revenue, higher profit, and even happier employees. Sound too good to be true? Well, it almost is"* (Van Ewyk, 2002)

#### **QM relevancy problem 2: Losing Relevance, and 'problems leaving the can'**

TQM loses relevance because the business community links TQM with the 'old economy', i.e. manufacturing. An Australian consultant states *"Quality is mainly*



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*applicable to low-growth, low-risk maturing industries that improve and copy rather than break new ground". The implication is clear: in the era of the 'knowledge economy', TQM may be perceived as less important (James, 1997).*

Larsen (2001) uses the garbage can lifecycle metaphor to describe the situation of QM. QM has reached the maturity phase, where the problems which were the reason for embarking upon QM are starting to "leave the can". Notably, the big product reliability gap between the Japanese industry and the European and American industry was closed (Larsen, 2001).

Nylund (1999) uses another metaphor to describe a similar weakness of the ageing TQM movement. *"Once companies have wrung out everything they can out of TQM and other reengineering processes to become more efficient, they run up against a wall brick. Their stock prices might be flat compared to Internet, software and other knowledge intensive companies"*<sup>4</sup>(Nylund, 1999).

### **QM relevancy problem 3: Not strategic**

The disconnection of TQM for the strategic thinking of the organisation is a major cause for the lack of strategic impact. *"The inherent lack of strategic integrity embodied within TQM is considered being one its main flaws"* (Jarrar and Aspinwall, 2000).

A Related claim is that TQM can bring about some competitive advantage; however this advantage is inherently replicable, and therefore is not strategic and sustainable over a longer period of time (Suresh, 2002).

Skyrme (2002) agrees with this claim, and adds that *"TQM and similar initiatives have helped organisations become more efficient at what they do. But how many such initiatives really make the best of the company's talent and help them differentiate themselves in the market place?"* (Skyrme, 2002)

### **QM relevancy problem 4: The Roles-Royce syndrome: Narrow focus**

Many organisations admitted that failed QM program could be attributed to the too narrow definition of quality scope and objectives they adopted. *"The disillusioned companies pinpointed narrowly defined quality objectives as one major reason for their failure. Just like Rolls-Royce's cars, their products had some superlative aspects but considered overall they failed to deliver"* (Van Ewyk, 1995).

Malhotra (2002) warns of the inherent risk from Continuous Improvement, a core concept of QM. *"A key challenge of most organisations with institutionalised 'best practices' is to ensure that such practices remain open to critique, adaptation and replacement so that the enterprise is not caught in the death spiral of doing more of the same better and better with diminishing marginal returns:(Malhotra, 2002)*

In Australia, there is a growing dissatisfaction with the QM movement. A senior executive from the Australia Quality Council addressed this problem, saying that *"too many quality practitioners have seen quality as an end in itself rather than a method that is only useful when it supports a specific business end. The difficulty we have had is that organisations view the parts of quality separately rather than as parts of a whole"* (James, 1997).

### **QM relevancy problem 5: Controversial financial justification**

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<sup>4</sup> Nylund's article was written in 1999, before the crisis of many companies belonging to the 'new economy',



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As TQM requires significant management attention and resources, the question of its value erases frequently. For example, a survey of 27 vice managers of quality from Fortune 500 companies indicates that 75% of them are under considerable pressure to show the payoff from TQM (Singhal and Hendricks, 1999).

The literature around TQM reflects an active dialogue between the opponents of the movement, who claim that it is not significantly impacting the bottom line of the organisation, and its supporters who claim the opposite. Both sides come with evidence from large-scale surveys or even quantitative analysis with statistical evidence.

Here are two examples:

- Opponents: A survey of 100 British firms indicated that 20% believed that their quality programs had achieved tangible results.
- Supporters: An analysis of 600 quality Award winners shows that they outperformed the average industry (as represented by the average performance of Standard and Poor 500) in all financial indicators: growth, stock price, stock returns and return on assets (Singhal and Hendricks, 1999)

#### **QM relevancy problem 6: Not business oriented an 'end to itself'**

Pyzdek (2001) articulates this as the major shortcoming of QM: *"We focused on quality and ignored other business issues. Quality trumped everything else. Of course, this made no business sense and often leads organisations to fail despite of improved quality"* (Pyzdek, 2001).

The case of several winners of the Baldrige award demonstrates this shortcoming: *"Much of the disquiet about QM comes from the fact that a number of the companies which have won prestigious Malcolm Baldrige National Quality Awards, have subsequently got into financial difficulties. For example, Wallace & Co, an Oil Equipment manufacturer that won the award in 1990, recently filed for Chapter 11 Bankruptcy as the cost of its quality programs increased and oil prices fell. Florida Power and Light, winner of the inaugural Baldrige Award, also found itself in straitened circumstances a few years after"* (Van Ewyk, 1995)

Other researchers point toward a tendency of many QM practitioners to see *"quality as an end to itself rather than a method that is only useful when it supports a specific business ends"* (James, 1997).

Larsen (2001) believes that gradually the QM methods become *"goals and solutions to their own problems"*. For example, *ISO 9000 certification assures a certification, and not much more. TQM awards systems provide awards"*.

Similarly, Byrne (1997) argues that *"TQM spawned mini-bureaucracies charged with putting it into action"*.

#### **QM relevancy problem 7: Strong operational impact, poor effect on business performance**

The impact of QM is both a result of and one of the reasons for the current situation of the QM community.

There is a large body of research about the impact of QM. Sousa and Voss (2002) who have researched the academic literature (summarising more than 10 researches) around this subject conclude that:

Quality and performance:



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- ❑ *"Quality performance (mainly conformance quality) has a significant and strong effect on operational performance"*
  - ❑ *"Quality performance has a real and not always significant effect on business performance".*

#### QM and performance

The conclusions about the interactions between QM practice and performance are consistent with the former set of conclusions:

- ❑ *"QM practices have a significant and strong impact on quality and operational performance."*
- ❑ *"The impact of QM practices on business performance is poor and not always significant."* (Sousa and Voss, 2002)

Many organisations admitted that that failed QM program could be attributed to the too narrow definition of quality scope and objectives they adopted. *"The disillusioned companies pinpointed narrowly defined quality objectives as one major reason for their failure. Just like Rolls Royce's cars. Their products had some superlative aspects but considered overall they failed to deliver"* (Van Ewyk, 1995).

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#### **3.4.2.3 Implementation problems**

Many researchers and practitioners defend TQM, claiming that the concept is profound and relevant to business success, but it is misapplied (Jarrar and Aspinwall, 2000).

*"After acknowledging that TQM has been ignored or rejected by most potential users, advocates still point to a small number of limited but presumably successful programs to claim that the system does work, it just isn't being implemented properly"* (Birnbaum, 2000)

Some of the implementation problems:

##### QM implementation problem 1: Lack of continuity

The examination of quality programs shows that the highest distinguishing factor between programs that made a difference and the other QM initiatives was the length of the effort – how many years (or decades) they have sustained their continuous efforts and focus on quality improvement (Ethics Quality, 2002). Lack of continuous training and education is another factor that impacts the sustainability of QM (Masters, 1996).

##### QM implementation problem 2: Piecemeal implementation

Many surveys done in the early 90's showed an impressive rate of implementation of TQM. For example, a survey of more than 300 Fortune organisations found that 77% of them reported that they implement TQM. However, Yong and Wilkinson (1999)



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claim that in most cases, this was a "partial" TQN, and "TQM programs are far from being as comprehensive or as much the 'full' TQM as its proponents have advocated".

#### **QM implementation problem 3: Lack of Leadership**

According to the Ethics-Quality organisation, (Ethics Quality, 2002), *"leadership must live the philosophy and ethics of TQM. There is no room for selfishness, moral exclusion, exorbitant compensation for a few, inconsistent or selective ethics"*. This seems easy enough, yet this has proven to be the weakest link in many quality journeys. The commitment of leadership is frequently mentioned as one of the most significant barriers to the success of TQM (Masters, 1996). This is the reason why "Leadership" is the first criterion in the list of most national quality awards (Baldrige, 1998).

#### **QM implementation problem 4: Lack of Marketing**

Most writers on TQM make the point that implementation of TQM requires a major shift in attitudes throughout the organisation. Maxon (1994) claims that *"too many TQM initiatives fail or are abandoned through reasons defined after as 'lack of senior management commitment', 'lack of understanding of TQM' or 'selecting the wrong philosophical approach' – but the real reason is because the principals and practices of marketing have not been applied, or applied effectively"*.

#### **QM implementation problem 5: Lack of time and resources**

In a research exploring the obstacles for TQM implementation in 109 organisations, the highest scored obstacle was 'lack of time' to devote to quality initiatives (Salenga and Fazel, 2000). Other surveys support this, and add a similar problem, 'lack of resources', to the list (Yong and Wilkinson, 1999).

#### **QM implementation problem 6: Resistance at all levels**

The problem is not only at the leadership level. Similarly to other change management programs, there is a considerable amount of resistance to TQM implementation from the middle managers and fear at the line employees (Yong and Wilkinson, 1999 and Masters, 1996)

### **3.4.2.4 Positioning problems**

#### **QM positioning problem 1: QM is a Stuff Function**

In many organisations, there are the stuff functions, e.g. HR, QM and IT people, and the "line" (or "operational" or "Business") people, e.g. the engineers, the sales people etc. It is the second group that 'does the real job' and created value.

The pressure on the Quality Departments is *"fuelled, in part, by the perception that stuff positions – such as those of quality departments – add cost rather than value"* (Silverman and Propst, 1996).

#### **QM positioning problem 2: QM is a corporate initiative**

In most organisations, QM is a corporate initiative, implemented by a corporate function (e.g. the QM department) and "sponsored" by the top management (either significantly or by paying lip service). As such, QM suffers from the symptoms and



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challenges of most corporate initiatives. In an article titled "why corporate initiatives get stuck?" (Darragh and Campbell, 2001) the authors list several failure factors:

- The "business team" (or "line functions") do not see the same issue (e.g. Process Improvement) as the corporation.
- The business team does not give the issue the same priority as the corporate managers do. The team has more important priorities.
- The initiative is crowded out by other corporate initiatives
- The corporate commitment is not seen as credible. The corporate centre is sending mixed signals.
- Agreed plans have not been fully implemented.
- Unexpected and urgent new issues arise, which cause the corporation to run, might start a new activity that is in the opposite direction to the "flagship" initiative.

The misalignment between the corporate intentions (including support functions) and the agenda of the line functions are at the centre of these challenges.

### **QM positioning problem 3: Stand-alone approach**

Cole (2000) argues that QM is often managed as a stand-alone effort promoted by the quality department, and not well integrated into the rest of the organisational activities. According to Cole a more integrative and cross-functional approach is required.

### **QM positioning problem 4: Ageing**

Sousa and Voss (2002) see the position of QM on its life cycle curve slightly differently. They agree that now, decades after it was born, QM is a mature management philosophy. However, they argue that *"after its practices were stripped from their faddish connotations to the point of nowadays, it is generally accepted that QM is here to stay"* (Sousa and Voss, 2002). However, they also see the need to take this *"mature field further forward"*.

Udler and Zaks (2002) suggest that there is a wide range of research in the area of QM, which provides many new tools and techniques. But, *"very little make it into mainstream use"*. They blame the culture of *"political correctness"* and the *"comfort of existing systems in professional quality circles"* in blocking these innovations.

### **QM positioning problem 5: The methodology of yesterday**

James (1997) who reports on the decline of TQM in Australia claims that the frustration of its promoters is predictable: *"TQM, the technique that underpinned the rise of the Japanese manufacturing, was always going to be yesterday's technique by the time it arrived in Australia. Seeing it as the central solution to local manufacturing problems suffers from a fundamental logic flaw: if it has been done already, how can it be the basis of competitive advantage?"*

Pyzdek (1999) in an article contributed to a special issue of Quality Progress about "Quality in the 21 Century", states the QM community *"clings to the past"* and that *"Quality management has regressed"*. For example, *the ISO 9000 approach is based on military standards that first appeared in the '1940's. The management control*



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*paradigm was originally developed by Taylor in the first decades of the 210th century...Taguchi methods are over 50 (years old)".*

### 3.4.3 Support from the field: The experience of the author

The author, who acted for several years as an active TQM practitioner, has actually witnessed most of the challenges found in the literature. Chapter 10, which covers the TechCom case, provides a detailed report about the correlation between the claims in the literature and the reality of a specific TQM program. The fact that so many challenges are found in one company supports also the comment the author made earlier in this chapter. Although the challenges are presented in a flat linear root-cause model they are highly inter-linked, thus the presence of one problem will lead to many of the other problems.

The Quality 99 case, which refers to the Israeli QM community, triangulates the evidence for the single company case with evidence from a national community where many of the challenges were also found to be true in this case.



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## 3.5 The future of QM

In this thesis the author has explored how QM and KM may operate together in the future, for the benefit of both communities.

This question is dealt with in the next section. It is relevant to relate it to the wider perspective of the future of QM. This will enable the author to assess whether his own proposal on the future of QM is enhanced by the other QM future trends, or perhaps conflicts with these trends.

### 3.5.1 Emerging Future trends

The author found that many trends identified in the literature relate directly to the challenges of QM, as reflected in quotes from papers written by researchers and practitioners in the "QM challenges" chapter.

Most trends relate to the need to return relevancy to QM. Some refer not to the content and scope of QM but to the way it is approached, managed and implemented.

However, future development directions of QM are (or should) be impacted not only from the threats on the profession but mostly by the changes in the business, technological and sociological environment in which QM operates. Several authors suggested different sets of such driving forces. For example, Watson lists eight factors (Watson, 2000):

- **Partnering**: Superior products and services will be delivered through partnering (in all of its forms, including with competitors).
- **Learning systems**: Education systems for improved knowledge transfer and skills implantation will better equip people and firms to compete.
- **Adaptability and speed of change**: Adaptability and flexibility will be essential to compete and keep pace with changes' increasing velocity.
- **Environmental stability**: Environmental sustainability and accountability will be required to prevent the collapse of the global ecosystem.
- **Globalisation**: Globalisation will continue to shape the economic and social environment.
- **Knowledge focus**: Knowledge will become the prime competitive and wealth-creation factor.
- **Customisation and differentiation**: Customisation ("lot size of one") and differentiation (e.g. "quality of experience") will determine superior products and services.
- **Shifting demographics**: Age and ethnic changes will continue to alter societal values as we shift focus across generations.

Watson (2000), the president of ASQ, led a task force called Foresight 2020. Its mission was to identify the "future of quality in the age of technology". He argues that QM is at a risk of arriving at a 'status quo' or even demise and "today" is the inflection point. The following figure, used by Watson to illustrate his views on the future of quality, presents five positive/negative growth paths, and four scenarios identified by the team members (Watson, 2000).



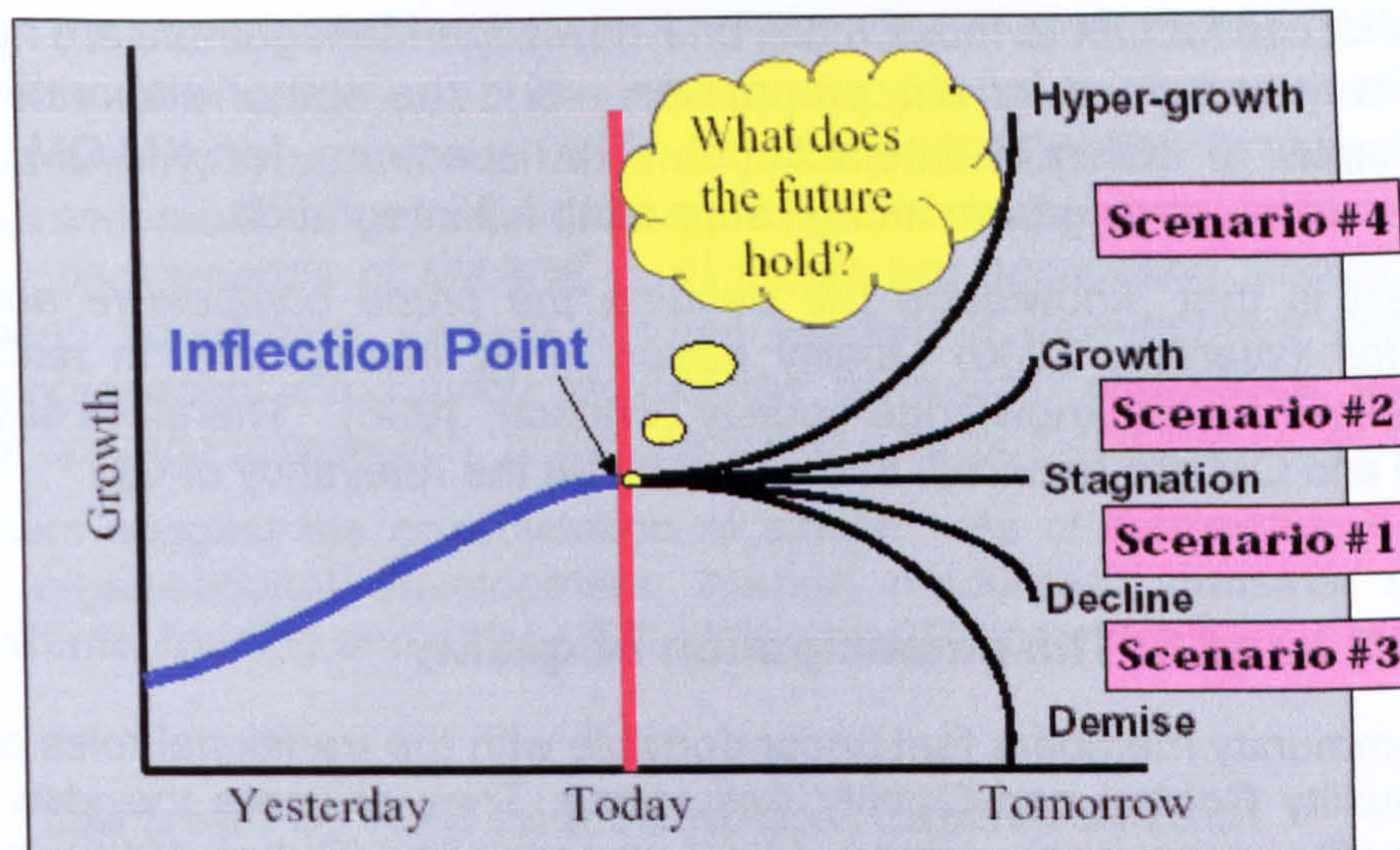


Figure 3-4: the future of quality: four scenarios (Watson, 2000)

Although not explicitly stated, the author believes that most of the future trends presented in the following sections are suggested by QM practitioners or academics, who advise the QM community on how to avoid scenarios #1 and #2 (stagnation, decline or even demise of QM) and realise scenarios #3 or #4 (growth).

Before looking deeper into the emerging trends of QM, the author needs to emphasise that there are conflicting views on the ability of QM to change. Some researchers argue that TQM can adapt to change. For example, "one of the reasons of the apparent resilience of TQM is its ability to change direction in response to change" (Wiele, et al., 2000). Gershon (1996) joins this optimistic view and suggests that "since the origin of the field, quality professionals have continually adapted to meet the changing needs of society" (Gershon, 1996). His conclusion is that "the need for quality professionals will not diminish". Some QM community members use a Darwinian vocabulary, stating the only those quality professionals who can adapt to change will survive (Wilson, 1996). However, other academics see TQM as a stiff discipline that can not respond to the changes in the environment (Larsen, 2001).

The author grouped the emerging trends into 10 groups:

#### 3.5.1.1 QM trend 1: Focus on sustainability

One of the scenarios of the "foresight 2020" task force, nominated by ASQ to look into the future of QM, is titled "the sustainability show". According to the scenario, the quality mandate will expand to include quality of life in the broad context of community and environment (Watson, 1998).

Tangible evidence of this trend is the environmental standard ISO14000, which is now being promoted in many organisations by their QM departments. Another one is a growing emphasis on implementing QM in healthcare.

The Institute of Alternative Futures has predicted how several professions (e.g. Quality, journalism, and Health Care) will move up the value chain. In the case of QM, it predicts a move from supporting operations to supporting strategy creation and then to supporting vision creation (Dighe and Bezold, 1996).

#### 3.5.1.2 QM trend 2: Focus on knowledge



The voices that call for QM to focus more on Knowledge Management are numerous. There are many variations for this proposition – and the author elaborates on this trend in Chapter 5 (QM/KM interactions). The spectrum for KM/QM potential interactions is wide, ranging from mutual support to full integration.

The argument is that “*knowledge will become the prime competitive and wealth creation factor*” (Watson, 2000) Quality needs to be instrumental in realising the benefits promised by the knowledge society (Watson, 1998). Therefore strong links between KM and QM are required, in order to retain the relevancy of QM.

### 3.5.1.3 QM trend 3: The emancipation of quality

Many QM community members feel uncomfortable with the traditional roles of quality, which are Quality Control and Quality Assurance. They promote the idea that the days of the auditor are over in a world of ‘self responsibility’ (Sutter, 1996). In a paper titled “*The Emancipation of Quality*”, the president of ASQ refers to the change of the association name from ASQC to ASQ. “*The American Society for Quality is now free of C – it is out of control, free from the restricting perception that the society cares only about the technical aspects of quality control found in manufacturing application*” (Watson, 1998).

### 3.5.1.4 QM trend 4: Performance and Business Focused

Many QM practitioners and academics suggest that QM needs to shift its focus to business performance improvement (Flynn and Saladin, 2001 and Dalrymple *et al.*, 1999).

This trend is demonstrated clearly in the criteria of Quality Awards such as the Baldrige Award. When it was introduced in 1988, the importance of the “Results” category was 100 points out of 10000, less than categories such as “leadership” and “Human Resources utilisation”. By 2001, the importance of “Business Results” had inclined gradually to 450 points. The following figure illustrates this shift:

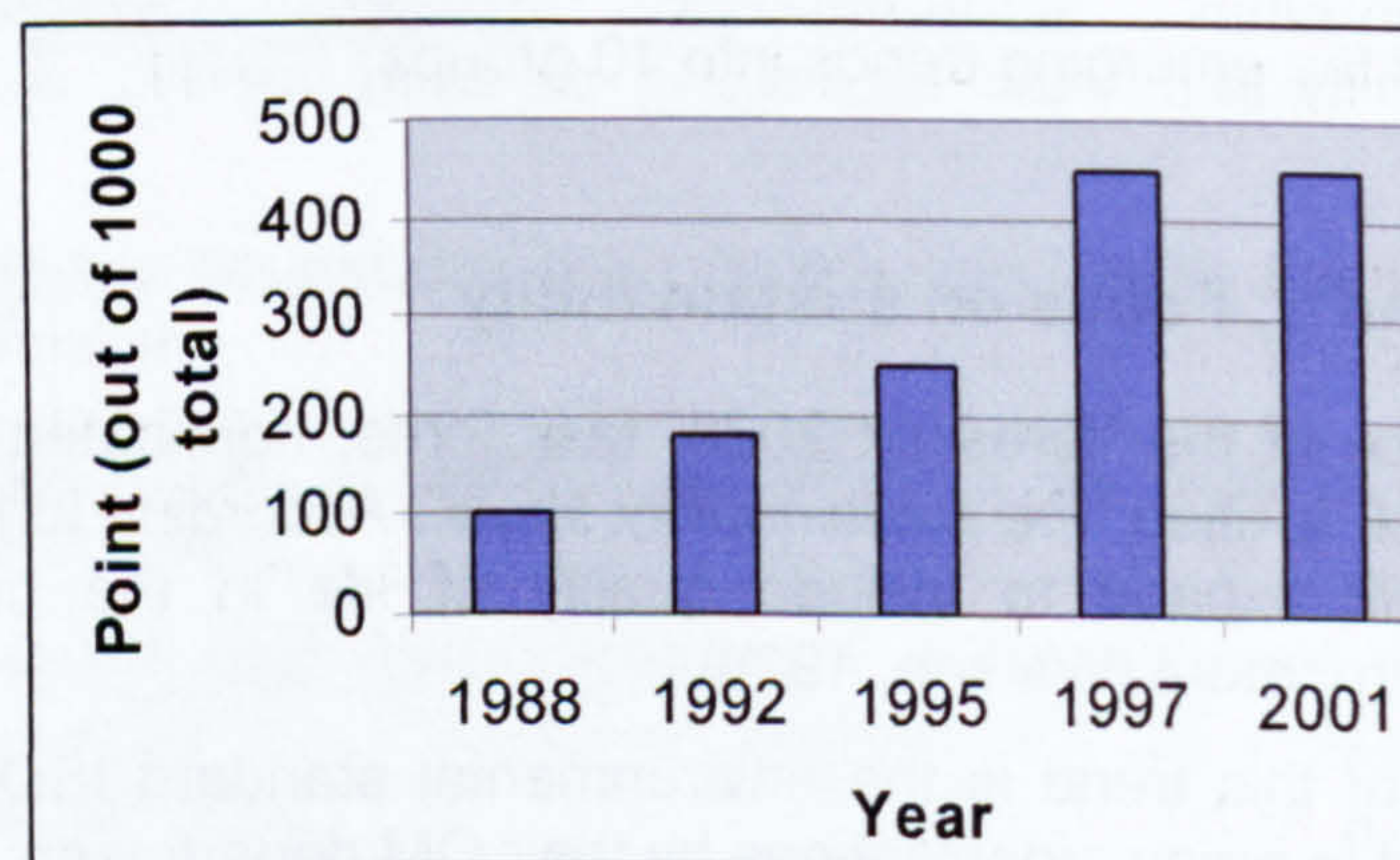


Figure 3-5: Baldrige criteria: importance of “business results”

### 3.5.1.5 QM trend 5: Multidisciplinary approach

There are several voices that believe that the quest of organisational excellence requires a multi-disciplinary approach, where the QM discipline is an important player, but not the only one. In a new international academic network, supported by the TQM Magazine and called the Multinational Alliance for Organisational



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Excellence (MAAOE). An article titled "Next Generation Quality Management" describes this set of disciplines. *"The primary disciplinary backgrounds of its primary participants are highly varied – what binds participants together in their commitment to the advancement of society through organisational excellence. Among the disciplinary backgrounds of MAAOE participants are accounting, continuous quality improvement, economics, finance, human resources development, industrial and systems engineering, information technology, leadership and ethics, management, marketing, operations research, psychology and statistics"* (Dalrymple et al., 1999).

Other writers suggest the consolidation of similar sets of disciplines, e.g. strategic planning, organisational development, human resources, industrial engineering, quality systems, training and safety (Silverman and Propst, 1996)

### **3.5.1.6 QM trend 6: TQM as a complex adaptive system**

In the section of the thesis dealing with QM challenges, its over simplified assumptions and ignorance of the complexity of organisational life is mentioned. Several researchers in the emerging area of complexity advise the QM community to re-think its basic assumptions and *"borrow perspectives from this field"* Dooley and Johnson, 1995). For example, using complexity principles should lead QM professionals to refresh their thinking about teams and view them as 'self-organizing systems'.

### **3.5.1.7 QM trend 7: Data and Information Quality**

Albrecht (1999) in an article titled "Information: the next quality revolution" suggest that after achieving significant results in the areas of product quality and service quality, the next frontier is clear. *"The issue of information quality is a sleeping giant, and its effects could dwarf those of the product quality and service quality combined"*. He bases this argument on the enormous cost of poor quality information in sectors such as the medical services, banking services and others (Albrecht, 1999).

Wang et al. (1998) from MIT joins the growing group of academics and practitioners who see Information Quality as the next quality frontier. In 1995 Wang established the Total Data Quality Management (TQDM) program in MIT, as a research field (Wang et al., 1998).

English (2001) justifies this trend by showing that information is a strategic business resource of the organisation, used to manage the other resources e.g. financial capital. Poor quality of information can lead to major financial losses, but it is managed as a by-product. Therefore, it is only natural that *"Information Quality management is the next frontier"* of the quality movement.

### **3.5.1.8 QM trend 8: New tools**

Some writers see an evolutionary future for QM, in which their community will continue to develop new process-oriented tools. There are two arguments for this trend:

- *The existing tools are "starched beyond the limits of their intended functions" (Wilson, 1996).*
- *Advance technology enables new capabilities and functionalities of quality tools*



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While some of the earlier TQM books described the “7 quality tools”, later literature presented many emerging tools, e.g. the “seven new quality tools” (Greene, 1994).



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### 3.5.1.9 QM trend 9: From groups to individuals

*"We overemphasize group activities"* claims Pyzdek (1999) referring to the QM community, which promotes groups and teams everywhere – service teams, improvement teams, project teams, cost reduction teams, cross functional teams etc. However, much of the success of the organisation results from individuals working alone and making unique contributions. Sometimes these exceptional individuals break the company's rules and procedures (and violate QM principles) in order to arrive at breakthrough. Pyzdek (1999) argues that such behaviour should not be punished and rather that *"the organisation should cultivate an environment where it is rewarded"*.

### 3.5.1.10 QM trend 10: Quality in new areas

Quality was traditionally focused on manufacturing operations and organisations. A survey of future trends suggests that it would expand its scope to health care, education and Governance (Dighe and Bezold, 1996). Other writers point to many other areas such as e-Commerce, Internet content and the media.

### 3.5.1.11 QM trend 11: Quality will be the job of everybody

There is an agreement between many QM practitioners that an optimal and full implementation of TQM leads to a seamless Quality Management situation. The organisation will not need any more QM programmes since its principles will be embedded in the basic beliefs and activities of all employees.

Kufidu and Vouzas (1998) for example, describe a 4-stage life cycle:

- i. *Specialist separate function*
- ii. *Organisation-wide special quality initiatives*
- iii. *Quality integrated into the organisation's process*
- iv. *Quality is a core organizing principle*

In the last phase, quality will be invisibly embedded in every sphere of activity (Watson, 1998). Smith explains the decline in TQM usage (as demonstrated by the Bain survey) by suggesting that the activity associated with quality initiatives is now part of mainstream behaviour (Smith, 2002 and Chandler, 1998).

The result is that quality will be the job of "everybody" and existing workgroups will assume some, if not all, of the quality department's responsibility. The wide availability of computational and statistical tools, supported by new technologies which require less expertise ("the electronic hammers of quality") will contribute to this trend (Watson, 1998). It is predicted that some QM people will be laid off, while other will be integrated into other departments. (Silverman and Propst, 1996). Similarly, there will be less need for Quality Managers, as quality management will become the job of every manager (Smith, 2002). What does this mean to the QM community? That its success to fully implement the cultural change led by the community will lead to the disappearing of large sections of it.



### 3.5.2 Mapping future trends to current problems

The next phase was to explore whether the suggested trends, as identified in the literature, addresses the problems of the QM community. In order to discover such possible links, the trends were grouped according to problem groups. The author discovered that three of the four problem areas were addressed by these trends. Moreover, some of these trends, e.g. "knowledge focus", "information and data focus" and "multidisciplinary approach" are directly linked to the overall subject of the current research (QM/KM interactions) and some of the others are also related in a more implicit way. It was interesting to note that the implementation problems were not addressed. A possible explanation is that they are perceived as tactical ones, QM leaders anticipate that addressing the more strategic issue will solve also the tactical ones e.g. by "Emancipation of Quality" trend, the "resistance at all levels" problem will be reduced.

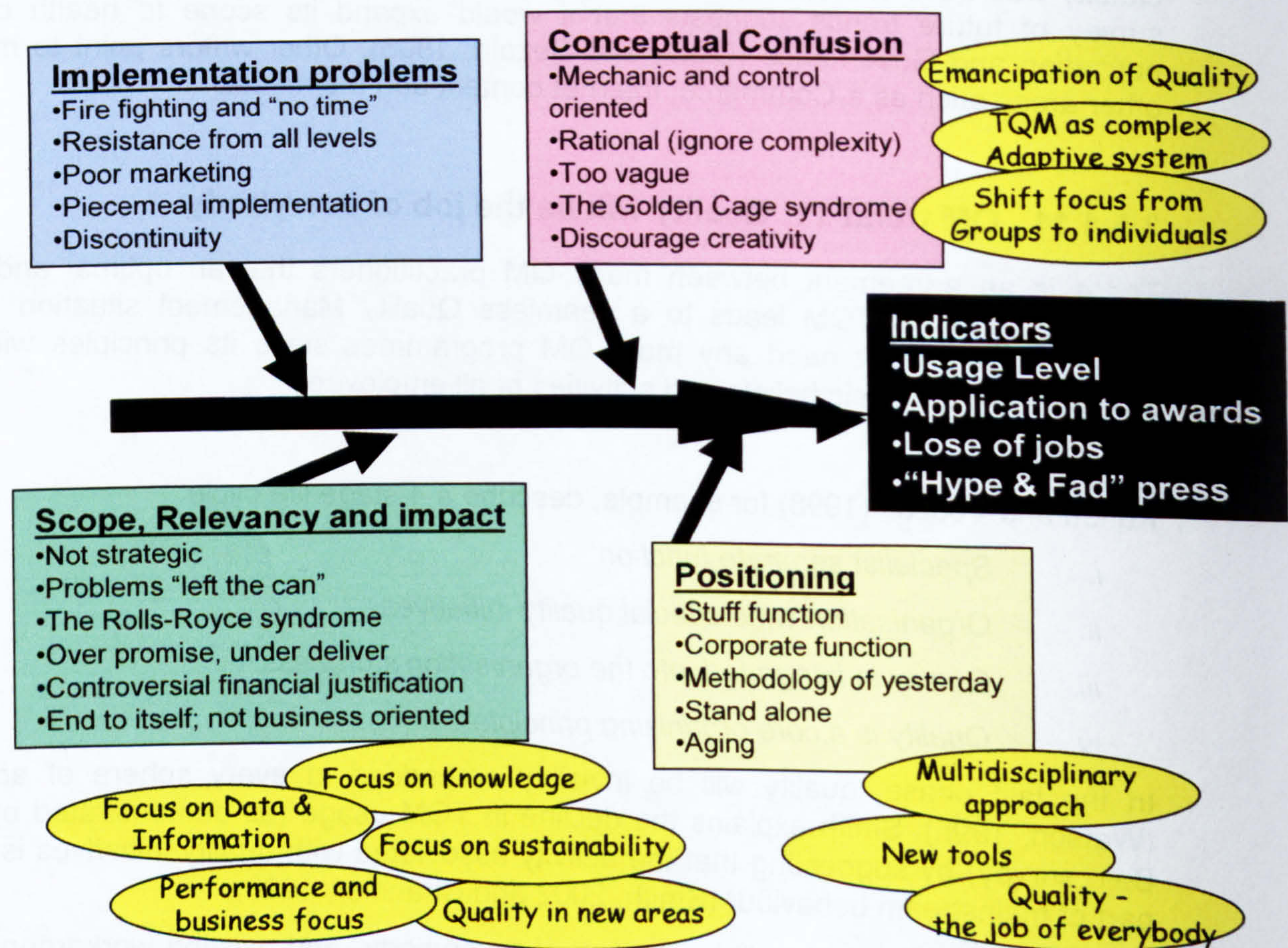


Figure 3-6: Mapping QM future trends to current problems

## 3.6 Conclusions

Due to the conceptual confusion around the meaning of the term "Quality Management" the author explored several alternative definitions to arrive at a working definition that reflects the current scope of this discipline. He chose to build the definition around the model embedded in the 2000 National Quality Awards Criteria. In addition, an operative definition of the meaning of "Quality Management Professional Community" was given.



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Once these were identified, the author, in an extensive literature survey, explored the problems of this community. From the literature review it was possible to gain an understanding of the current situation of the QM community. The picture is of a large and mature community that is starting to show initial signs of decline and ageing.

Secondly, the root causes for this situation were classified into 25 root causes, which were grouped into four categories:

- Conceptual problems and confusion – multiple and sometimes conflicting issues such as vague approach vs. mechanistic, bureaucratic and control oriented approach.
- Scope, Relevancy and Impact problems – mostly claims about the non-strategic focus and impact of QM as it is practised in reality. Many argue that QM had significant contribution to operational and especially manufacturing quality. However, such challenges are less relevant now, as the competition has moved to other dimensions.
- Implementation problems – which stop QM from realising its full vision which is demonstrated for example in the National Quality Awards business excellence models.
- Positioning problems – e.g. the position of QM as stuff or corporate unit, and the ageing of QM community members.

The author located in the literature several researchers and academics that not only identified the problems of QM, but also proposed future scenarios and directions for its revitalisation.

The author mapped the proposed future trends against the root causes, and found that many of the communities' problems are potentially addressed by these trends. Several of these trends are related to the basic idea of this research, namely the co-operation of QM in a more holistic approach, and the Linking of QM to KM.

The author believes that Watson (1998), the president of AQS, describes the challenges of the QM community clearly, he states that;

***“The quality professional faces a tough decision: to sit in an ivory tower on a hilltop and be the archetypal, iconoclastic guru who losses touch with the real world and watches the time pass, or be a true active learner, who reflects on the past and present and reaches out to discover the pathways to the future”.***



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## 4 Knowledge Management (KM)

### 4.1 Aims

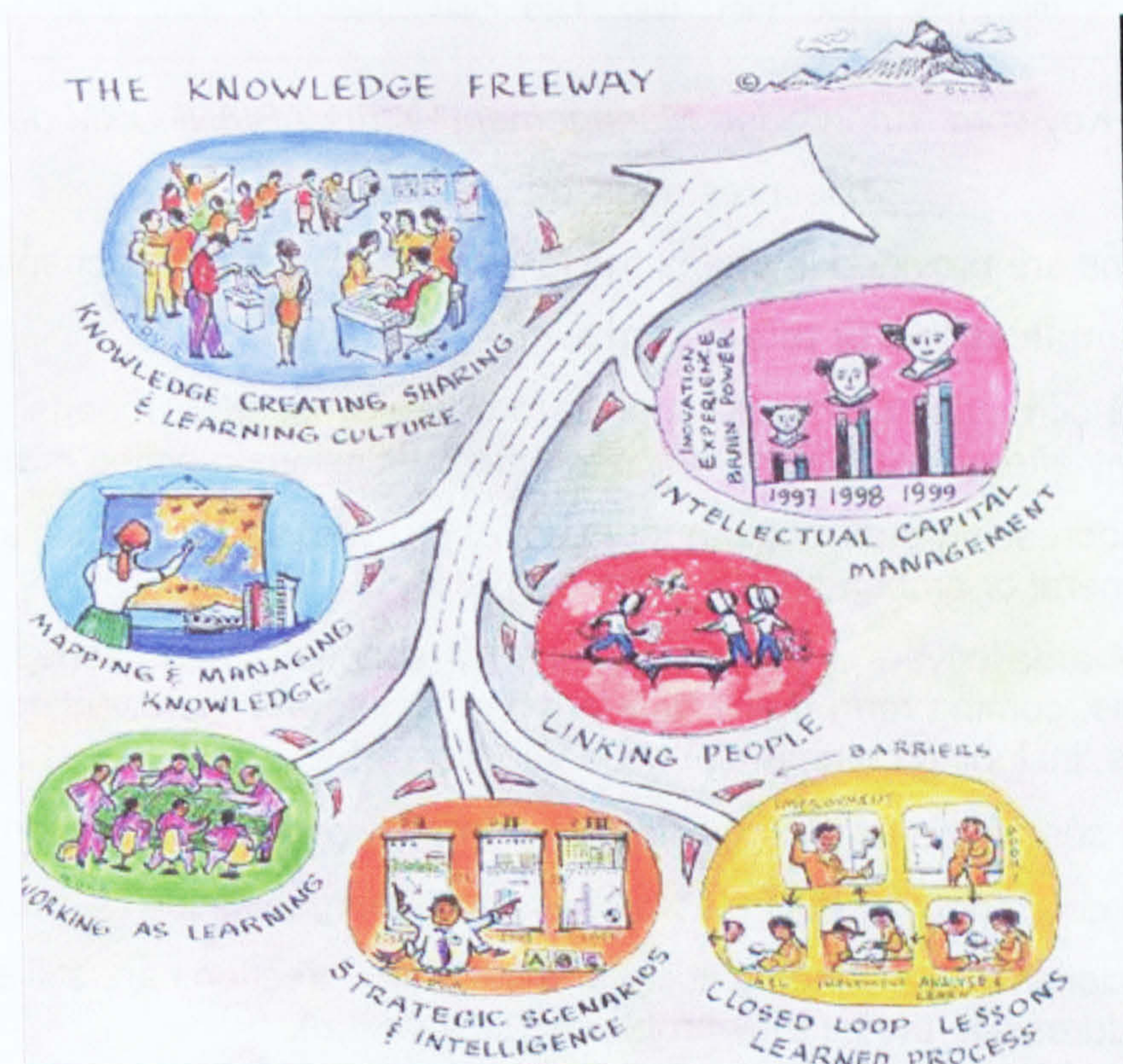
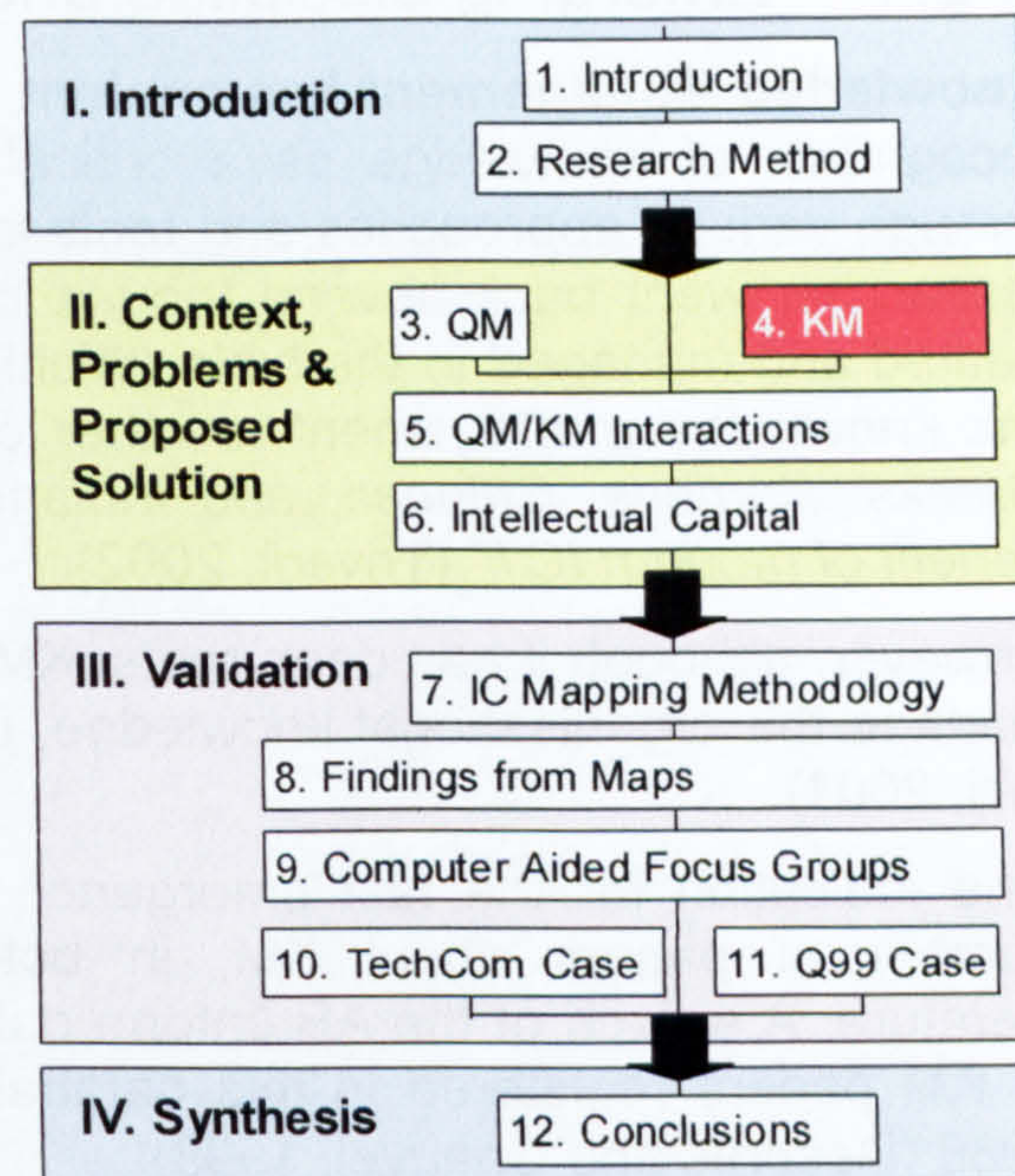
The research focuses on the potential interactions between two professional communities: the QM community and the KM community. This chapter provides the context and required background for the second explored community, the KM community.

The chapter relates to the first research question:

**Q1: Why do the QM and KM professional communities need to improve?**

At the end of the chapter the reader will understand:

- What Knowledge Management is?
- Who belongs to the Knowledge Management community?
- What the concepts, methods and tools of the Knowledge Management community are?
- What the expectations from Knowledge Management are and what its actual outcomes are?
- What problems face the Knowledge Management community?
- Which trends impact the development of the Knowledge Management movement, and how they are linked to its problems and challenges?



The "Knowledge Highway" model



## 4.2 Introduction

### 4.2.1 Emerging discipline and how this impacts the chapter

**Knowledge Management has ancient roots.** Many researchers of KM note that the recognition of knowledge as a critical resource, and the attempts to manage it through various approaches and tools is not new (Wij, 1995 and Grant, 2000). One researcher went back several thousands years and explored how Knowledge was treated and managed in the bible (Wohlgelernter, Pasher and Zucker, 1997). Others link knowledge management to other cultures. *"Ancient civilizations-the Egyptians, Greeks, Romans, Chinese, and Indians-had excellent systems of KM without the benefit of modern ICT"* (Trivedi, 2002).

However, although it has deep roots, KM as a systematic and integrated approach to manage the organisational knowledge, is an emerging discipline (Owens, 1999 and Wij, 2001).

One indication for the fast emergence of KM as a new discipline is the growing number of papers about KM, in both the academic and popular/professional literature. A search of the ABI/Inform database, for example, shows that the number of KM papers registered in this database has more the doubled every year since 1988 (Despres and Chauvel, 1998)

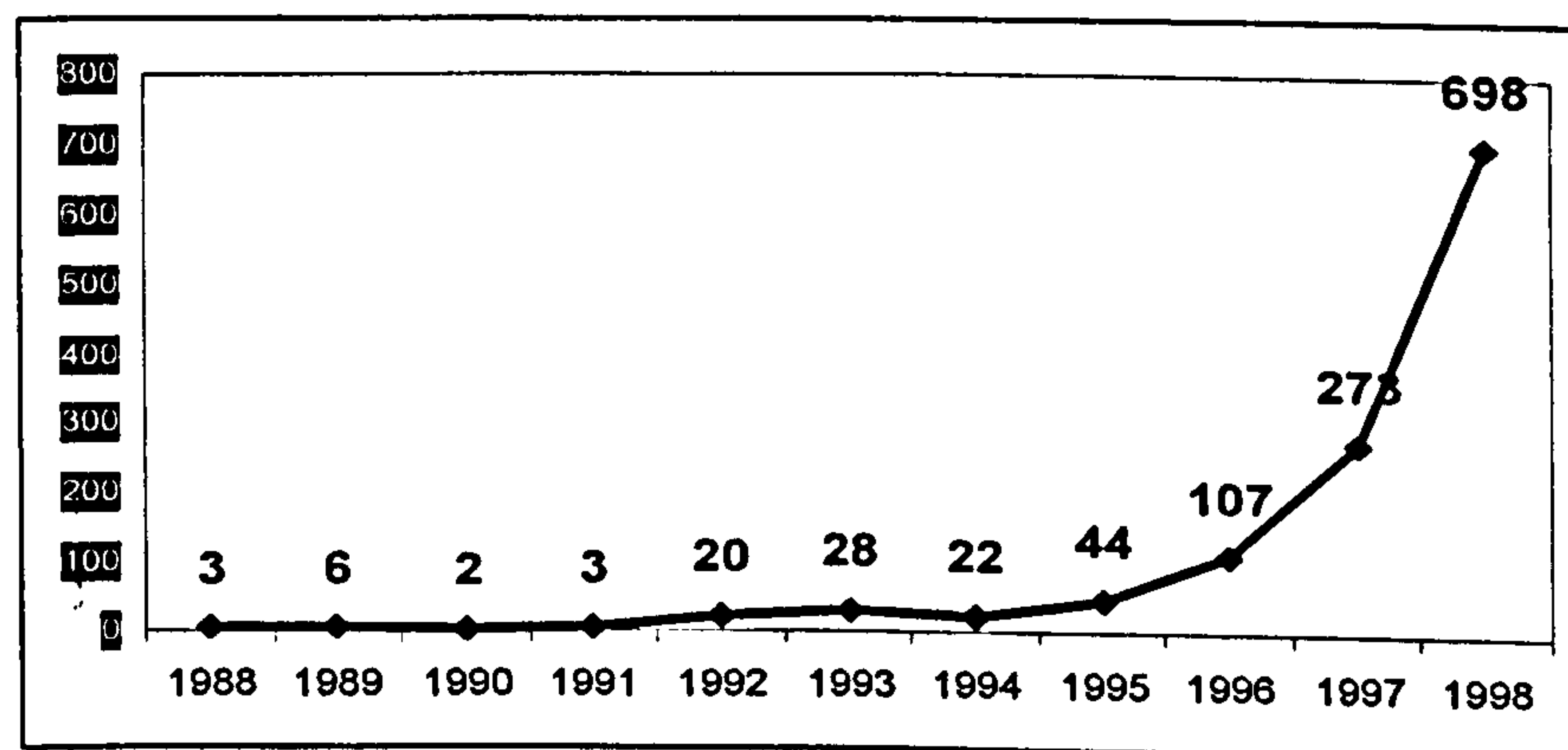


Figure 4-1: Keyword "Knowledge Management" in the ABI/INFORM databases  
(Despres and Chauvel, 1998)

Other indications are provided in one of the following sections of this chapter.

#### What are the implications of this fast growth?

- The KM community is still struggling to define what "KM" means, and there are many alternative, sometimes conflicting definitions (section 4.3)
- KM is addressing enormous amounts of objectives, some specific and others very general or ambiguous (Section 4.4)
- The KM area covers a growing number of concepts, approaches, methods and tools, coming from many different directions, and representing a host of interests, including commercial ones (section 4.5).
- The KM community is coping with many "infancy problems" (section 4.6).
- The KM community is still in the process of self-organisation (section 4.7).
- The discipline is still shaping itself, and its future directions are still emerging, some addressing the infancy problems (section 4.8).



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***“Emerging phenomena are fuzzy phenomena, and particularly so when their importance is fundamental”*** (Despres and Chauvel, 1998). This is the case of KM, as will be shown in this chapter.

#### **4.2.2 Definition: What is “Knowledge Management”?**

In the literature review the author came across a large number of different definitions of Knowledge Management. Many authors are aware of the difficulty to define knowledge management. For example:

*“The daunting task of defining KM threatens to stop so many incipient initiatives in their track”* (Barth, 2000b).

Amidon (1999) states that *“Knowledge management is an oxymoron and could run the course of a fad”*. The reason for this view is because Amidon does not believe that Knowledge can be managed. This is why she uses the term “Knowledge Innovation” as a substitute. Por (2000) also states that KM is an oxymoron: *“Why Knowledge Management Is an Oxymoron? Because Knowledge is not a “thing” that can be “managed”. It is a capacity of people and communities, continuously generated and renewed in their conversation”*. He uses the term “Knowledge Ecology” instead of KM. Barth (2002b) adds: *“Knowledge management is such a preposterous, pretentious and profoundly oxymoronic phrase that many of those who really understand KM—including some of the field’s pioneers—refuse to use the term”*.

Here we bring a small selection of definitions suggested in the academic and practitioners’ literature.

*“Most practitioners agree that the term knowledge management loosely refers to a broad collection of organisational practices related to generating, capturing, and disseminating know-how and promoting knowledge sharing both within an organisation and with the outside world”*. (Trivedi, 2002)

*“Knowledge management refers to strategies and structures for maximizing the return on intellectual and information resources”* (Barth, 2000b).

*“Knowledge management: Capturing, storing, transforming, and disseminating information within an organisation, with the goal of promoting efficiency at the least and innovation and competitive advantage at the most”*. (Carliner, 2001)

*“It’s about creating value based on the intangible assets of the firm through relationships where the creation, exchange and harvesting of knowledge builds the individual and organisational capabilities required to provide superior value for customers”*. (Saint-Onge, 1999)

*“Knowledge management is about the use of computer and communication tools to help people gather and apply their collective data, information, knowledge and wisdom in order to make better, quicker, wiser and more effective decisions”* (Meieran, KnowInc 2001)

*“It is the art of creating value by leveraging the intangible assets. To be able to do that, you have to be able to visualize your organisation as consisting of nothing but knowledge and knowledge flows”* (Sveiby, KnowInc 2001)

*“It is the attempt to recognize what is essentially a human asset buried in the minds of individuals, and leverages it into an organisational asset that can be accessed and used by a broader set of individuals on whose decisions the firm depends”*. (Prusak, KnowInc 2001)



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*KM is the systematic and explicit management of policies, programs, practices and activities in the enterprise, which are involved in sharing, creating and applying of knowledge. The management of knowledge aims to enhance existing knowledge and its networking and reuse. (Hofer-Aleis, KnowInc 2001)*

*"Knowledge Management caters to the critical issues of organisational adaptation, survival and competence in face of increasingly discontinuous environmental change.... Essentially, it embodies organisational processes that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings" (Malhotra, 1998).*

### **Working definition**

After considering all the above suggestions, the author decided to revisit the definition of KM and, as a basis for the working definition for this thesis, use the working definition he used as a practitioner. However, some aspects needed to be added to the original definition, adapted from the above definitions, in order to make it more complete. The author presented this definition when communicating the objectives, scope and activities of TechCom's KM program to both internal and external people.

*Knowledge Management is the active, explicit and systematic effort to enhance the organisational capabilities to create, nourish, capture, store, retrieve, share, use and exploit knowledge assets in order to maximise the organisational performance.*

The reasons for this choice:

- ☐ This definition helps to distinguish between Knowledge Management and the many knowledge-related activities that all (good) organisations were doing before the introduction of this discipline. This is achieved by the word "active, explicit and systematic effort".
- ☐ It is descriptive: the definition explicitly addresses the main objective of KM, as well as its main activities.
- ☐ The author used this definition in the case studies and interviews, and found that it was well received and understood.

This definition is not complete if the word "knowledge" is not explained. However, since this term can carry many different meanings that are related to the specific context in which it is used, the author decided to add to the definition an explanation of the term, which is customised to each communication event, depending on the audience. For example:

"Know-how, Know-when, Know-who, Know-when, Know-why"

"The Intangible assets of the organisation"

"The information resides in the organisation systems, put into context".

## **4.3 What are the objectives of KM?**

The author believes that trying to answer this question will help later in linking KM to QM, on the grounds of common or complementary objectives.

Most theorists, practitioners and solution providers, who attempted to define KM, recognised that "*KM is not an end to itself*" and suggest one or several objectives. However, the diversity of objectives is overwhelming.



The author will categorise them into several categories:

- ❑ **Bottom line objectives:** there is a growing awareness in the literature that KM is not an end to itself. As will be shown in later sections, the difficulty to define the concrete (business) objectives of KM is one of the reasons for the failure of KM initiatives.
- ❑ **Intermediate KM objectives:** this category refers to the need to improve the KM performance of the organisation, i.e. to do better "Knowledge sharing", "knowledge reuse" etc.

#### **Bottom-line objectives**

Objective	Quote
<b>Overall performance</b>	<i>"...in order to maximise the organisational performance ...to achieve one's business objectives". (Logan, 2001)</i>
<b>Sustainability</b>	<i>"...fundamentally sustaining a collaborative advantage for the excellence of an enterprise, the sustainability of a nation's economy and the advancement of society (Amidon, 2001)</i>
<b>Organisational adaptation</b>	<i>"...organisational adaptation, survival and competence in face of increasingly discontinuous environmental change...." (Malhotra, 1998).</i> <i>"...to their capacity to adapt to the changing world" (Taylor, 2001)</i>
<b>Return on Intellectual assets</b>	<i>"...for maximizing the return on intellectual and information resources" (Barth, 2000b).</i> <i>"..making a direct connection between an organisation's intellectual assets — both explicit [recorded] and tacit [personal know-how] — and positive business results..." (Barclay and Murray, 1997).</i>
<b>Competitive position</b>	<i>"...providing a new and urgent focus to sustain competitive position" (Grey, 2001).</i>
<b>Organisational external image</b>	KM has an active role in the PR efforts of organisations. The case of Skandia Insurance company is a fascinating case of such link between KM (called IC in Skandia) and the increase in corporate image. (Edvinsson, 2001).
<b>Better decision making</b>	<i>"...in order to make better, quicker, wiser and more effective decisions." (Meieran, 2001)</i>
<b>Productivity and efficiency</b>	<i>"Productivity of the knowledge worker" (Drucker, 1996).</i> <i>"Knowledge management involves studying existing business processes and how they can be improved, as well as designing new processes for efficiency" (Hansen, 2002).</i>
<b>More or better Innovation</b>	<i>"The new focus on what I call knowledge innovation-the creation, exchange and application of new ideas into goods and services could fuse many diverse interests into a shared vision" (Amidon, 2001).</i> <i>"...with the goal of promoting efficiency at the least and innovation and competitive advantage at the most" (Carliner, 2001).</i>
<b>Profitability</b>	<i>"...consider the total value of the intellectual capital in their enterprise and thought about how to leverage this value into profitability and eventually cash (Ehnbom, 2002).</i>
<b>Time to Market</b>	<i>"Skandia says its knowledge management efforts reduced the start-up time for opening a corporate office in Mexico from seven years to six months" (Stuart, 1996).</i>
<b>Employee</b>	<i>"Knowledge management tools can empower knowledge workers to</i>



<b>empowerment</b>	<i>take ownership of their intellectual assets" (Barth, 2000).</i>
<b>Quality related objectives</b>	<p>Objectives such as "better product quality", "higher customer satisfaction" are also mentioned in the literature. For example</p> <p><i>"Its role is to create added value to customers by significantly increasing product quality" (Ofek and Sarvary, 2001).</i></p> <p><i>Investment in enterprise knowledge management should lead to improvements such as: 1. efficient use of time, 2. enhanced client satisfaction" (Huang, 1998).</i></p> <p><i>"... ..to provide superior value for customers" (Saint-Onge, 2001).</i></p> <p><i>...to improve our capability to engage with the outside world and our "customers" (Armstrong, 2001).</i></p>

Table 4-1: bottom-line objectives of KM

### Intermediate objectives

While some definitions of KM focus on the bottom-line results (and was highlighted earlier, there is a move toward this type of objective) many people still define the intermediate objectives, i.e. the improvement in specific aspects of KM. For example:

<b>Objective</b>	<b>Quote</b>
<b>Management of data, information, knowledge, Wisdom</b>	<i>"help people gather and apply their collective data, information, knowledge and wisdom" (Meieran, 2001)</i>
<b>Increasing Accessibility to the knowledge assets</b>	<p><i>"... and leverage it into an organisational asset that can be accessed and used by a broader set of individuals on whose decisions the firm depends". Larry Prusak, 2001)</i></p> <p><i>"..help to transform an individual's tacit knowledge and experience into explicit knowledge that is readily accessible by others". (Stone, 2001)</i></p>
<b>Reusing of existing knowledge</b>	<i>"...aims to enhance existing knowledge and its networking and reuse". (Hofer-Aleis, 2001)</i>
<b>Creating infrastructure and enabling conditions</b>	<p><i>"...creating the social environment and technical infrastructure so that knowledge can be accessed, shared and created".(Logan, 2001)</i></p> <p><i>"...creating the conditions that enable people to produce valid knowledge and to do so in ways that encourage personal responsibility". (Argyris, 2001)</i></p>
<b>Increasing the Intellectual Capital and capabilities</b>	<p><i>"...information and knowledge sharing among colleagues which enhances the intellectual capital of the organisation". (Vieser, 2001)</i></p> <p><i>"...re-tool (the employees) for the opportunities of tomorrow. Such knowledge workers would then become appreciated assets - the reserve and source of intellectual capital which can be deployed to create competitive advantage".( Eisenberg, 2001)</i></p> <p><i>"...to enhance new knowledge and the ability for innovation". (Hofer-Aleis, 2001)</i></p>
<b>Creating context</b>	<i>"...link structured and unstructured information with the changing rule by which people apply it". (Kouloupoulos, 2001)</i>
<b>Learning from the past</b>	<i>"Knowledge management helps an organisation to gain insight and understanding from its own experience" (Texas, 2001)</i>

Table 4-2: Intermediate objectives of KM



The above bottom-line and intermediate objectives are linked in cause and effect relationships. A good demonstration of such relationships is provided by Wijn (2001) who refers to "expected KM benefits" (but the author believes that "benefits" and "objectives" are close enough terms in this case).

## 4.4 What is KM?

### 4.4.1 Introduction

Sveiby (2000), when discussing the definition of KM, suggests that "*concepts are best defined from how people use them*". The author agrees with this statement. Although many alternative definitions of KM were presented (including an effort to create a definition for this thesis) and the multiple objectives of KM elaborated on, the author believes that at this point there is still the risk that "KM" remains a fuzzy philosophical, theoretical, commercial or business concept in the eyes of the reader.

Following the advice of Sveiby (2000) the author will try to elaborate and clarify the definition of Knowledge Management by looking at what people in this field are doing.

Some proponents of KM claim that this large collection is a symphony of integrated mechanisms, while others are hearing schizoid melodies or an outright cacophony (Despres and Chauvel, 1998). This is why the author will try to describe those tools not as stand-alone tools but in the framework of some organised strategies, as suggested by KM theorists.

### 4.4.2 Alternative frameworks

Here the author will provide a very high-level description of a few of the frameworks which can be used to organise the many concepts and tools of KM.

**Framework I: Wijn (2001)** based his strategic KM framework on 4 tactical focus areas.

- Intellectual asset focus, which covers the management of the intangible assets of the organisation
- People focus, which covers all aspects of learning and sharing culture.
- Enterprise effectiveness focus, which covers the business processes.
- Information Management and information technology focus (IM/IT) which looks at technology tools as enablers to the other three focus areas.

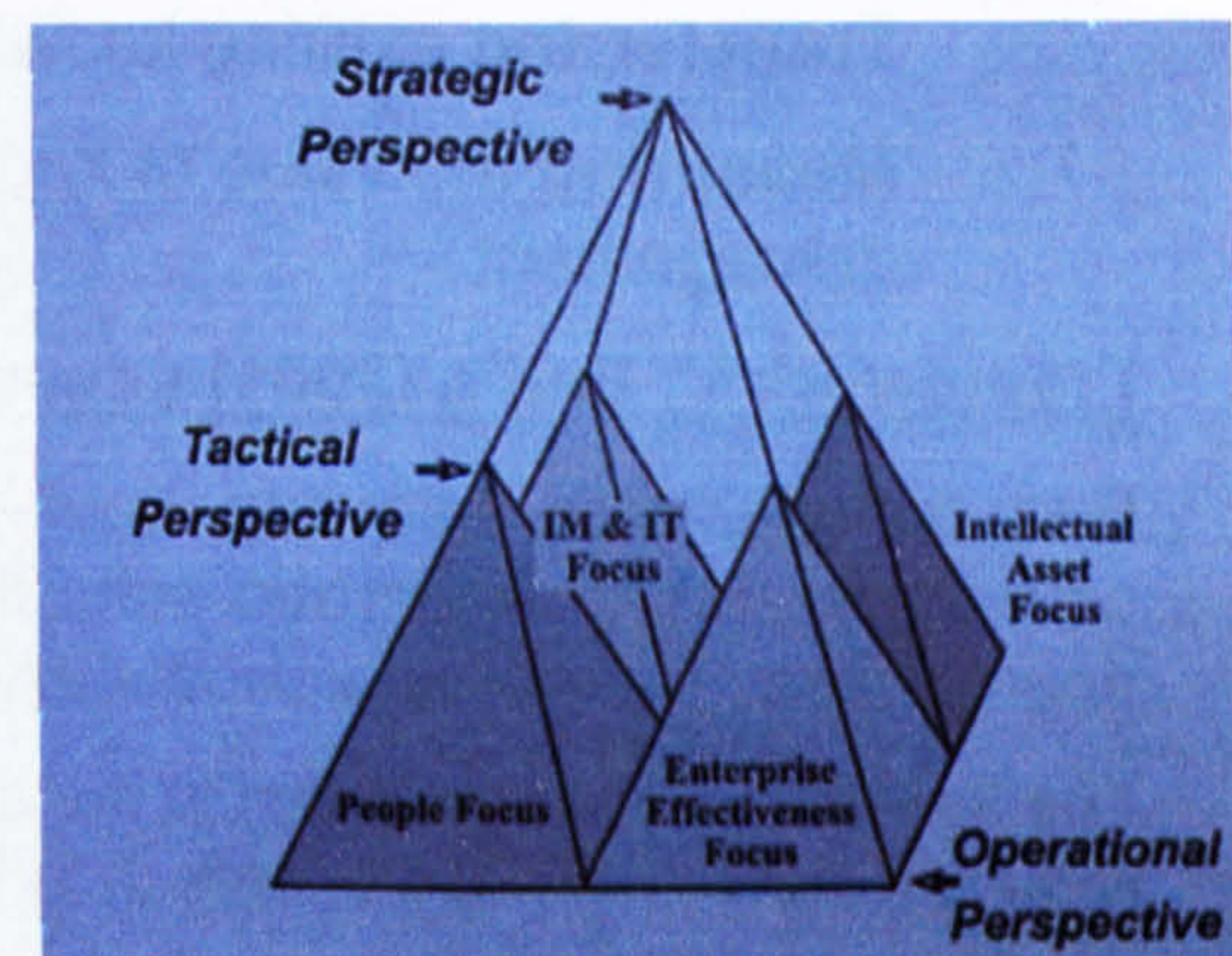


Figure 4.2: Km four perspectives (Wijn 2001)

**Framework II: Nonaka and Takeuchi (1995)** provided the tacit/explicit knowledge transformation model, which served as a cornerstone in contemporary thinking on KM.

Nonaka and Takeuchi define four basic knowledge processes:

- **Socialisation** – the transformation of tacit knowledge of an individual/group into tacit knowledge of another individual/group.



- **Externalisation** - the transformation of tacit knowledge into explicit knowledge (sometimes referred to as "codification" by other theorists).
- **Combination**- the transformation and re-arrangement of explicit knowledge
- **Internalisation** - the transformation of explicit knowledge into tacit knowledge.

**Framework III: Despres and Chauvel (2001)** suggest taxonomy of Applied Knowledge Management, based on two dimensions that form a two-axis matrix (Despres and Chauvel, 2001):

- Context (KM processes): scan and map, capture and create, package and store, share and apply, transform and innovate.
- Organisational level: organisation, group and individual

**Framework IV: Ruggles (1998)** also takes a process approach, and suggests eight major categories of knowledge-focused activities.

- **Generating** new knowledge
- **Accessing** valuable knowledge from outside sources
- **Using** accessible knowledge in decision making
- **Embedding** knowledge in processes, products and/or services
- **Facilitating** knowledge growth through culture and incentives
- **Representing** knowledge in documents, databases and software
- **Transferring** exciting knowledge into other parts of the organisation
- **Measuring** the value of knowledge assets and/or impact of knowledge management

#### **Framework V: Earl's (2001) seven KM schools.**

Earl distinguished between seven 'schools' which are grouped into three main categories: (a) technocratic schools, (b) economic approaches and (c) behavioural approaches. The seven schools are (c):

**The Systems School:** Rooted in the tradition of knowledge systems and expert systems, this is the longest established approach to KM.

**The Cartographic School:** This school is concerned with mapping organisational knowledge by linking knowledge and people ('yellow pages').

**The Process School:** This school can be seen as an outgrowth of Business Process Reengineering (BPR). It is based on two main ideas. First, providing operating personnel with task-specific knowledge can enhance business processes. Second, it is assumed that management processes are inherently more knowledge intensive than business processes, implying that contextual and 'best-practice' knowledge are important.

**The Commercial School:** This School is based on the commercial protection and exploitation of knowledge assets (intellectual property) such as patents, copyrights or trademarks.

**The Organisational School:** this school propagates the use of communities for facilitating knowledge exchange and creation. Communities can be inter-organisational or intra-organisational and are often interdisciplinary.



**The Spatial School:** This school centres on the use of space or spatial design to facilitate knowledge exchange.

**The Strategic School:** In this perspective, KM is seen as a dimension of competitive strategy. An example is again provided by Skandia that has declared intellectual capital as the firm's core capability, as well as by Buckman Laboratories. The goal is to build, nurture and fully exploit knowledge assets through a variety of possible means.

**Framework VI: Ward (2000)** from Hughes Space and Communication was one of the first practitioners that developed and implemented a comprehensive KM initiative based on a framework he developed. The framework, called "*The Knowledge Highway*", is intended to link the many "*Islands of knowledge*". It includes seven interlinked KM challenges:

- Managing knowledge
- Future Scenarios
- Lessons learned
- Networking
- Working as learning
- Intellectual capital management
- People and culture

**Framework VII: The selected framework: an integrated one**

After examining many alternative models including the five described above, the author decided to take elements of these model as a basis for a new framework.

The new framework is described in the following figure.

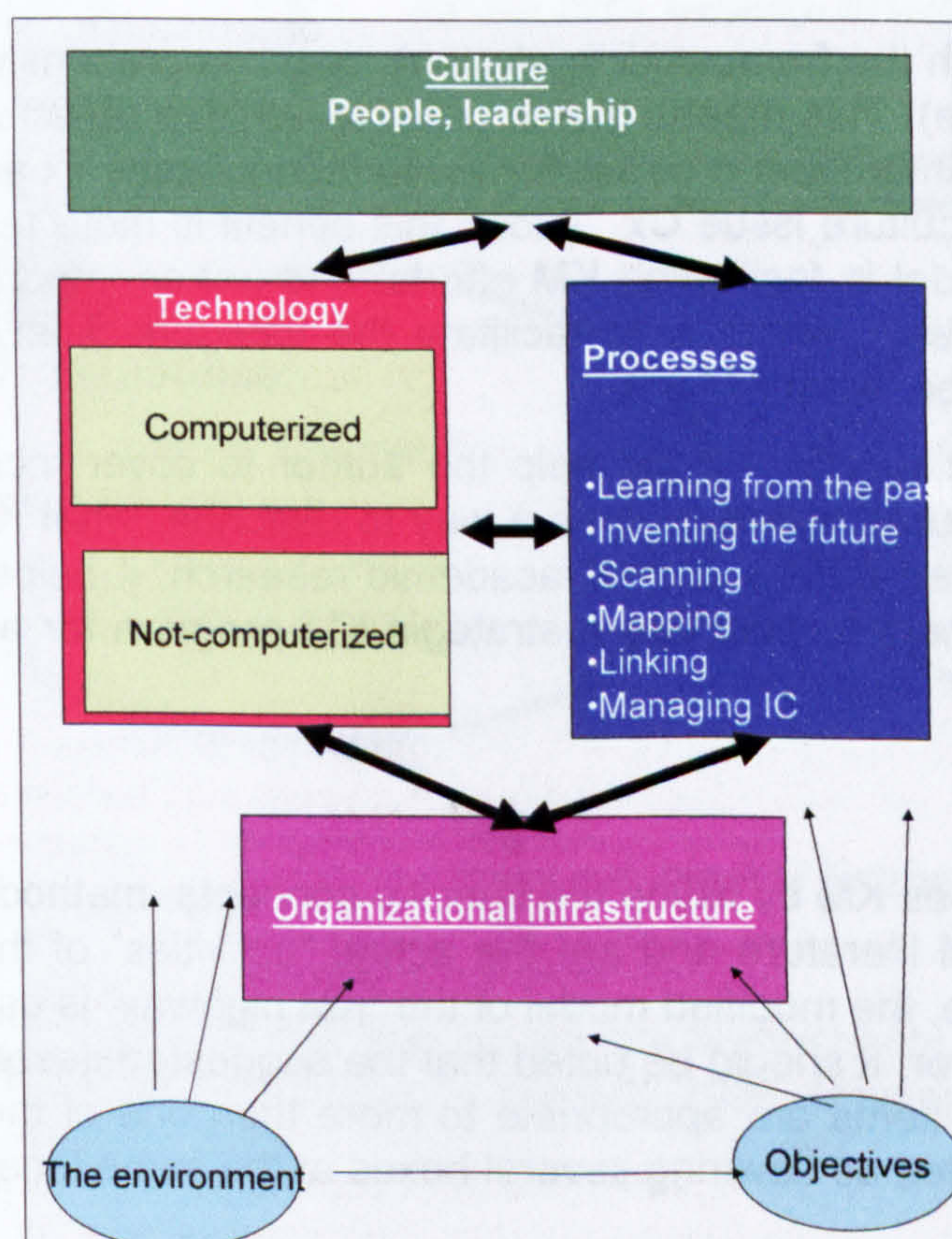


Figure 4-3: The new KM Framework



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In the next section this framework will be populated.

### **The benefits of the new framework**

The reason for creating the new framework is that although all models offered useful insights into KM, it was believed that none was useful enough to organise all KM concepts and tools into one model. The author arrived at this conclusion after trying (and failing) to use Framework V, which was closest to the author's line-of-thinking, as the working KM framework for this thesis.

The author believes that the new framework, which uses the strengths of the previous model, offers several benefits:

**The first benefit** of this model is that it covers explicitly all the focus areas which are considered (according to the reviewed literature) to be the critical focus areas of KM: "People and culture", "processes", "technology". This list is similar to Wijn's (2001) model but it changes the position of the Intellectual Assets area from a separate focus area into one included in the process box.

**The second benefit** is that it adds an additional focus area, the "Organisational Infrastructure". As a KM practitioner in the past, the author discovered it is a critical area.

**The third benefit** is that it breaks the "process focus" into the major KM processes, derived very much from the Knowledge highway model (Ward, 2000). In his role as a KM practitioner the author used the "knowledge highway" model to communicate the ideas and content of KM programs, and found this model to be useful (i.e. people understood it and could relate to it).

**The fourth benefit is** that the framework highlights two important issues:

The strategic objectives for doing KM

And the context in which all this is done.

**The fifth benefit** is that although the framework is strategic and comprehensive it is also modular (Lego-like structure). This means that in order to achieve objective O<sub>x</sub>, the organisation might focus on improving process P<sub>x</sub>, using technologies T<sub>x</sub> and T<sub>y</sub>, and putting some attention into culture issue C<sub>x</sub>. (Note, this benefit is more relevant to the use of the suggested model in facilitating KM efforts, and not so important in the role of the model in this thesis, which is to facilitate the categorisation of KM methods and tools and to describe "what KM is").

**And the sixth benefit** is that it **works** – it did help the author to cover most KM methods, concepts in one structured framework, as a way to describe "what KM is". Moreover, although it was created for the current academic research, it helped the author in a consultancy assignment to structure a strategic KM program for a large organisation.

### **The framework of KM**

In this section the author describes KM by listing the specific concepts, methods and tools that are covered in the KM literature and are the actual "activities" of the KM practitioners. As described above, the modified model of the "KM highway" is used as an organising framework. However, it should be noted that the suggested description is sketchy. Some of the specific items are appropriate to more than one of the four "boxes" and some may be regarded as covering several boxes at the same time.



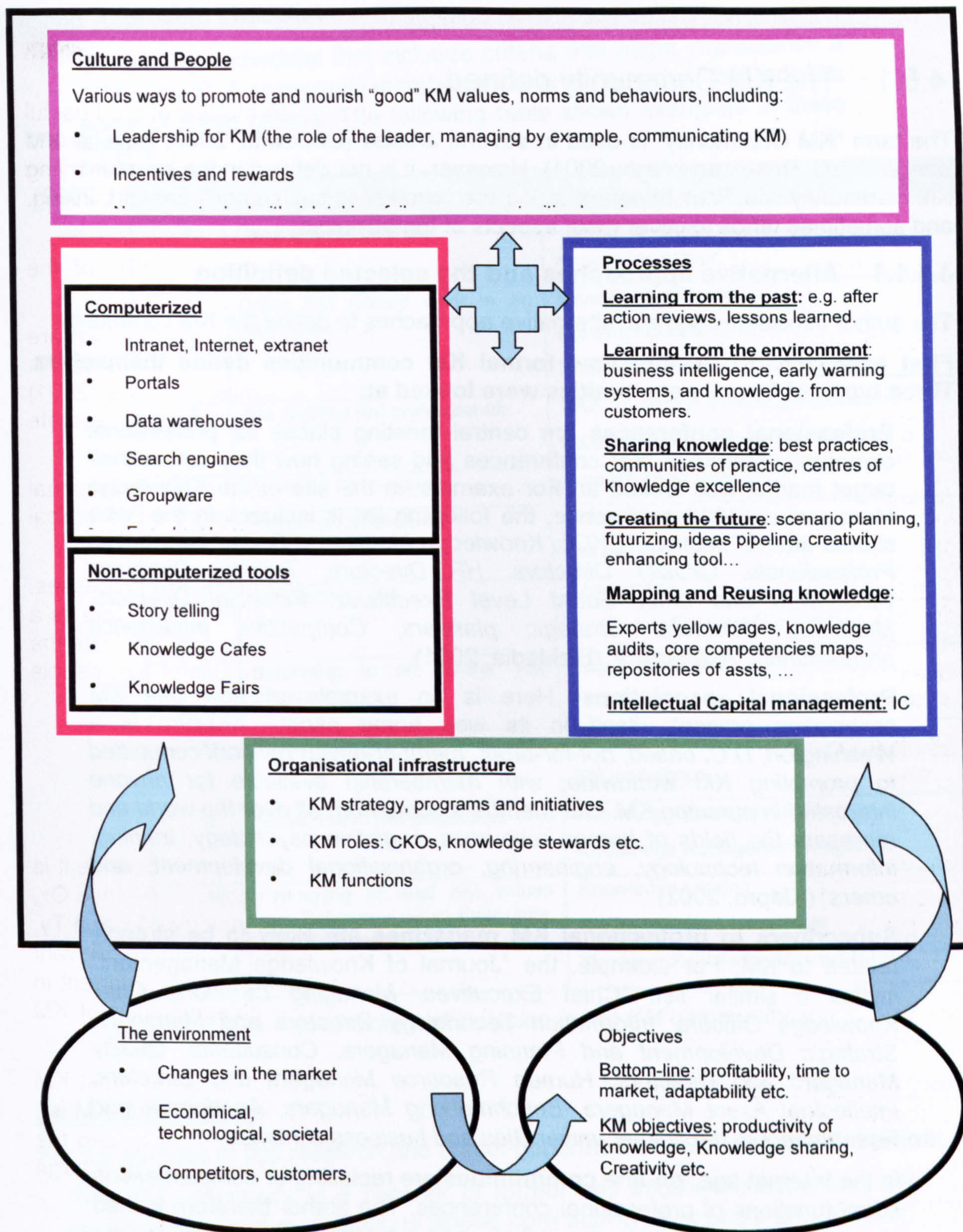


Figure 4-4: the KM Framework

There is vast literature that covers the components of the framework. Some of the more comprehensive sources are Wijn, 1995; Davenport, 1997; Skyrme and Amidon, 1997; and Earl, 1999.

## 4.5 The KM Community



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## 4.5.1 The KM Community defined

The term "KM Community" is used in several articles (Liebowitz, 2000; Havens and Knapp, 1999; Rosen and Digh, 2001). However, it is not defined in the literature. The KM community is difficult to define, since the term KM is such a blur (Stewart, 2002), and sometimes tends to cover most aspects of the business.

### 4.5.1.1 Alternative approaches and the selected definition

The author considered several alternative approaches to define the KM community:

**First approach:** to explore how formal KM communities define themselves. Three types of formal communities were looked at:

- **Professional conferences** are central meeting places for professional community members. KM conferences and seeing how they define their target market was looked at. For example, in the site of the Knowledge Management 2002 conference, the following list is included in the "who should attend" section: *"CKOs, Knowledge Managers, Senior Information Professionals, CIOs/IT Directors, HR Directors, Training Directors, CEOs/MDs and other Board Level Executives, Financial Directors, Marketing Directors, Strategic planners, Competitive intelligence professionals, Academics"* (BizMedia, 2001).
- **Professional associations:** Here is an example of how one KM association presents itself in its web home page: *"KMPro is a Washington, D.C. based, not-for-profit, member-driven network committed to promoting KM worldwide, with membership available for anyone interested in pursuing KM. Our members come from all over the world and represent the fields of human resources, cognitive psychology, training, information technology, engineering, organisational development, and others"* (KMpro, 2002)
- **Subscribers to professional KM magazines** are likely to be strongly related to KM. For example, the "Journal of Knowledge Management" invites a similar list: *"Chief Executives, Managing Directors, Chief Knowledge Officers, Information Technology Directors and Managers, Strategic Development and Planning Managers, Consultants, Quality Managers and Directors, Human Resource Managers and Directors, Intellectual Asset Managers, Benchmarking Managers, Academics and Researchers in the field at universities and business schools"*.
- In the Internet age, **on-line communities** are replacing or complementing some functions of professional conferences. The author therefore looked at some KM on-line communities and identified how they define themselves. Usually, most do not provide an explicit definition of "the community member profile".

For example, the successful "KnowledgeBoard-the European KM portal" (rated as best portal by Harvard Business School, summer 2002), attracts KM experts, professionals, academics, consultants. It also hosts many sub-communities and other KM networks. In September 2002 there were more than 3,000 members coming from 87 different countries. They describe the community as composed of *"researchers, consultants and practitioners from industry who collaborate to define common approaches and frameworks for KM in Europe. The community is open to all companies and people who want to take an active and constructive part in shaping Europe's future in KM"* (KnowledgeBoard, 2002).



## **Second Approach: checklist**

- Generating a checklist that includes criteria that might characterise a "KM person". A community member, then, is an individual that satisfies some of these criteria. The following table shows examples of these criteria:

#	Criteria	Examples
1.	Owning a KM job title	Chief Knowledge Officer Knowledge broker
2.	Doing KM related work in an organisation	knowledge mapping Content management Facilitating communities of practices
3.	Are certified KM professionals	CKE – Certified knowledge economist CKM – Certified knowledge manager
4.	Providing KM products	Computerised tools
5.	Providing KM services	KM strategy consulting KM training
6.	Researching KM	Academics Partners in EC funded projects
7.	Belonging to an on-line KM community	KnowledgeBoard AOK forum
8.	Participating in KM events	KM conferences KM workshops
9.	Subscribe to KM magazines	Knowledge Management Review Knowledge Management Magazine
10.	Promoting or lead KM values and Behaviour within their units, organisations	Knowledge sharing Reuse of exiting knowledge The Most Knowledge Managers list

Table 4-3: Checklist of inclusion in the KM community

### **Selected definition:**

For the purpose of this research, the author generated his own **working definition**:

*The KM community is a network of formal and informal communities of professionals and organisations whose core activity is strongly grounded in the different domains of KM; the community members identify themselves explicitly with this discipline.*

#### **4.5.1.2 Benefits of the selected working definition**

**This definition works.** The author tried it in the interviews, and the interviewees understood and used it without expressing concerns or any need for clarification. The author also found it useful when he used the definition to explore the case studies and write about KM in this thesis.



This definition is similar to the working definition of QM, as developed in the previous chapter. This compatibility will help at later phases of this thesis to conduct comparisons.

#### **4.5.1.3 Limitations of the definition**

##### **Riding the KM hype**

As part of the KM hype and in the confused KM market, there is a tendency for many product providers to present their product as a KM solution, even though the link to hard core KM functionality is very weak. Palmer (1999) describes a prominent scanner vendor who pushed a campaign, which states that for the ultimate in KM, one need not look at anything else other than their scanners. So, does the scanner manufacturer belong to the KM community?

##### **Avoiding the KM hype**

Professionals that perform KM related tasks as their core work. Sometimes, they will have the term "Knowledge" in their job title, e.g. Chief Knowledge Managers, Knowledge brokers, Knowledge Centres (Earl, 1999). However, in many organisations, because KM is suspected to be a fad, some professionals who do KM work prefer not to be explicitly identified with it and use titles such as Learning Officer (Murray, 1996)

##### **Self-definition**

The working definition is partially based on self-definition. This adds a dimension of subjectivity to it. However, the author does not see this as a problem.

##### **KM is everybody's business**

Similarly to the notion "Quality is everybody's business" some authors claim that in the knowledge economy, most employees are knowledge workers (Drucker, 1993). Others believe that it is the job of every manager to manage the knowledge of its department (Ringle, 2001). However, for practical reasons the author decided not to include "all employees" or "all managers" in the KM community.

#### **4.5.1.4 A configuration of the overall KM community**

Reading the literature, the author came across many KM communities, which can be categorised according to different dimensions:

**KM domains:** There are many communities that are based on a specific KM domain, or even KM product. For example, Atlanta based e-commerce professionals have developed a "community of content management professionals". (Put in correct reference) Another example is a community of hundreds of managers on a lotus notes based KM systems (Bernstein, 2002).

**Position:** Several *communities of knowledge managers* are reported in the literature (Chamish, 2002). An interesting case is the list of the 10 Most Admired Knowledge Leaders, which is voted annually by some 500 experts (Chase, 2001). In 2000, for example, it included industry leaders like John F. Welch - the president of General Electric, John Seely Brown - the chief scientist of Xerox, and Yotaro Kobayashi - Chairman of the Board, Fuji Xerox Co.

**Geography:** KM communities can be categorised according to region. An interesting case is the European Knowledge Management Forum, which started as a European KM research community and expanded to become a global one, with members from 87 countries (Baxter, 2002).



**Organisation:** Several large organisations have established formal KM communities within their organisations. For example, the large IT provider Schlumberger (Edmundson, 2001), and several consultancy firms like Andersen (Bernstein, 2002).

Many professionals belong to several KM sub-communities, which overlap. Furthermore, there is also overlapping with non-KM communities. In this study, several KM professional who belonged to additional communities' (e.g. KM and HR) were interviewed (Chapter 11).

The following chart visualises how the complex structure of the overall KM community, is characterised by a significant amount of overlapping between different sub-communities. There are several ways to look at the KM community, for example, it can be viewed from a geographical perspective (the bottom drawing) or from a professional position perspective (top drawing).

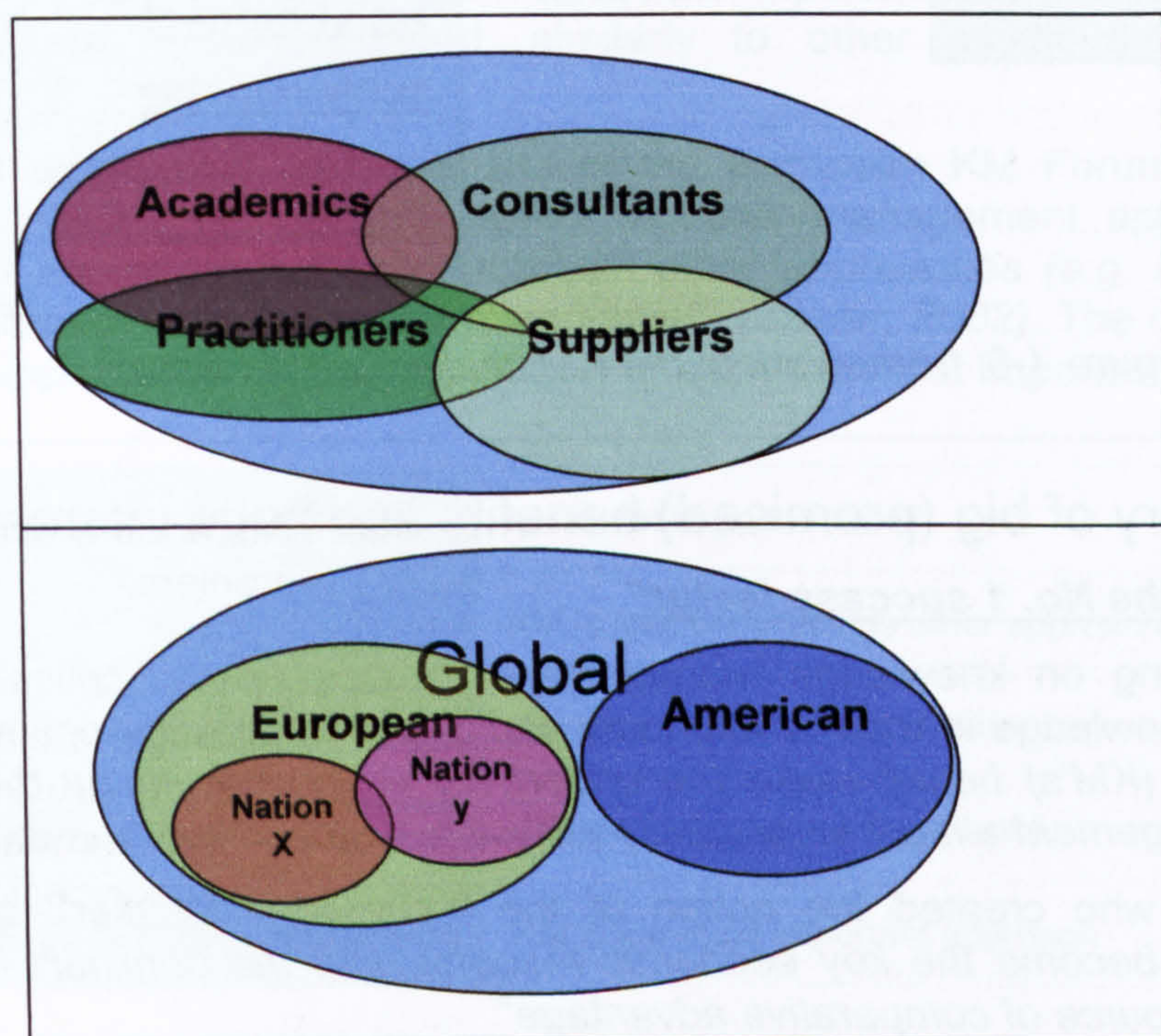


Figure 4-5: The structure of the overall KM community

## 4.6 The problems of KM

This section begins by reviewing the significant interest and high-expectations of the business community for KM.

Then, these optimistic views are confronted with data about the actual performance and benefits of KM, as perceived by the same community. The author presents the many indications of the disappointment of KM for many organisations.

Once this gap becomes apparent, the author can scan the literature to identify some of the related difficulties and root causes, which lead to such disappointment.

The author has experienced many of the listed difficulties. In the last section of this chapter, the difficulties found in literature will be correlated with the ones encountered by the author in two companies.

The structure of this section is presented in the following chart.



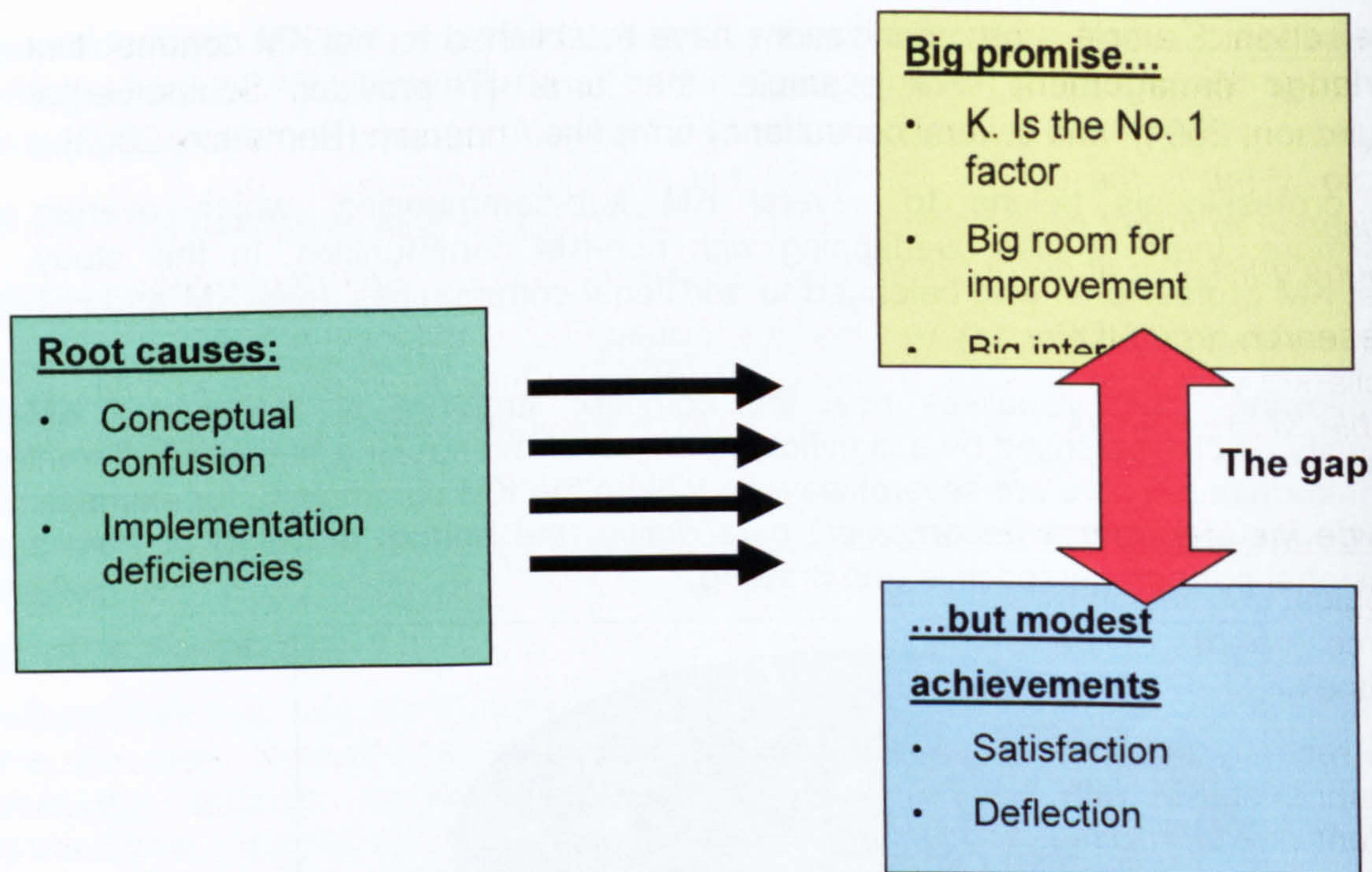


Figure 4-6: framework of the KM challenges discussion

#### 4.6.1 A story of big (promised) benefits and huge interest...

##### **"Knowledge is the No. 1 success factor"**

Mainstream writing on knowledge management focuses on the critical business importance of Knowledge in today's economy and is overwhelmingly optimistic. *"The claims made on (KM's) behalf make the underlying proposition about the value of knowledge management almost irresistibly attractive"* (Storey and Barnett, 2000)

Drucker (1996), who created the notion of the "knowledge Worker", states that *"Knowledge has become the key economic resource and the dominant – perhaps even the only – source of comparative advantage"*

Nonaka (2002), who formulated the tacit/explicit knowledge transformation model, is considered as one of the great theorists of KM. He argues that *"perhaps one of most remarkable developments of our time is the 'discovery' that knowledge is the key, not only to economic, but also the business and corporate success"* (Nonaka and Teece, 2001).

Similarly, McElroy (2000c) thinks that corporate knowledge, sometimes referred to as *Intellectual Capital, Knowledge Assets or business Intelligence*, is now being viewed as the last and only sustainable untapped source of competitive advantage in business (McElroy, 2000c).

Skyrme and Amidon (1997) report that 86% of the respondents in a survey they conducted believed that they were in knowledge intensive industries. They join the many writers who support the claim that Knowledge is the critical success factor. *"Knowledge underpins how well firms manage their core business process, how competitive their products and service are, how well they can adapt to changing markets"* (Skyrme and Amidon, 1997).

##### **"The size of the opportunity is huge"**

Many business analysts tried to assess the size of the KM opportunity. Usually, they assess the loss due to poorly managed knowledge, and as an indicator to potential savings, should KM be well implemented. For example:



In the classic article "Ten Principles of KM" Davenport (1997) argues that **Knowledge Management is expensive, but so is stupidity**. "...While knowledge management is expensive, the obvious retort is that not managing knowledge is even more so. What is the cost of ignorance and stupidity? How much does it cost an organisation to forget what key employees know, to not be able to answer customer questions quickly or at all, or to make poor decisions based on faulty knowledge?"

The research group IDC estimated that the fortune 500 would lose in 1999 12 Billion US dollars a year, due to "substandard performance, Intellectual rework and a lack of available KM resources" (Stewart, 2002). IDC have also estimated the expected loss in 2003: 31.5 Billion Dollars.

### **"Knowledge Management is critical"**

The logical conclusion from the claim about the importance of knowledge is that this resource needs to be managed, similarly to other critical resources of the organisation.

A poll recently conducted by the site of the European KM Forum compared the importance of KM with the importance of other management approaches: "How important is KM in direct comparison with other approaches (e.g. BPR, TQM, and CRM) to solve your actual business problems?" (Baxter, 2002). The results show that KM is considered as very important (30%) or even the most important (30%).

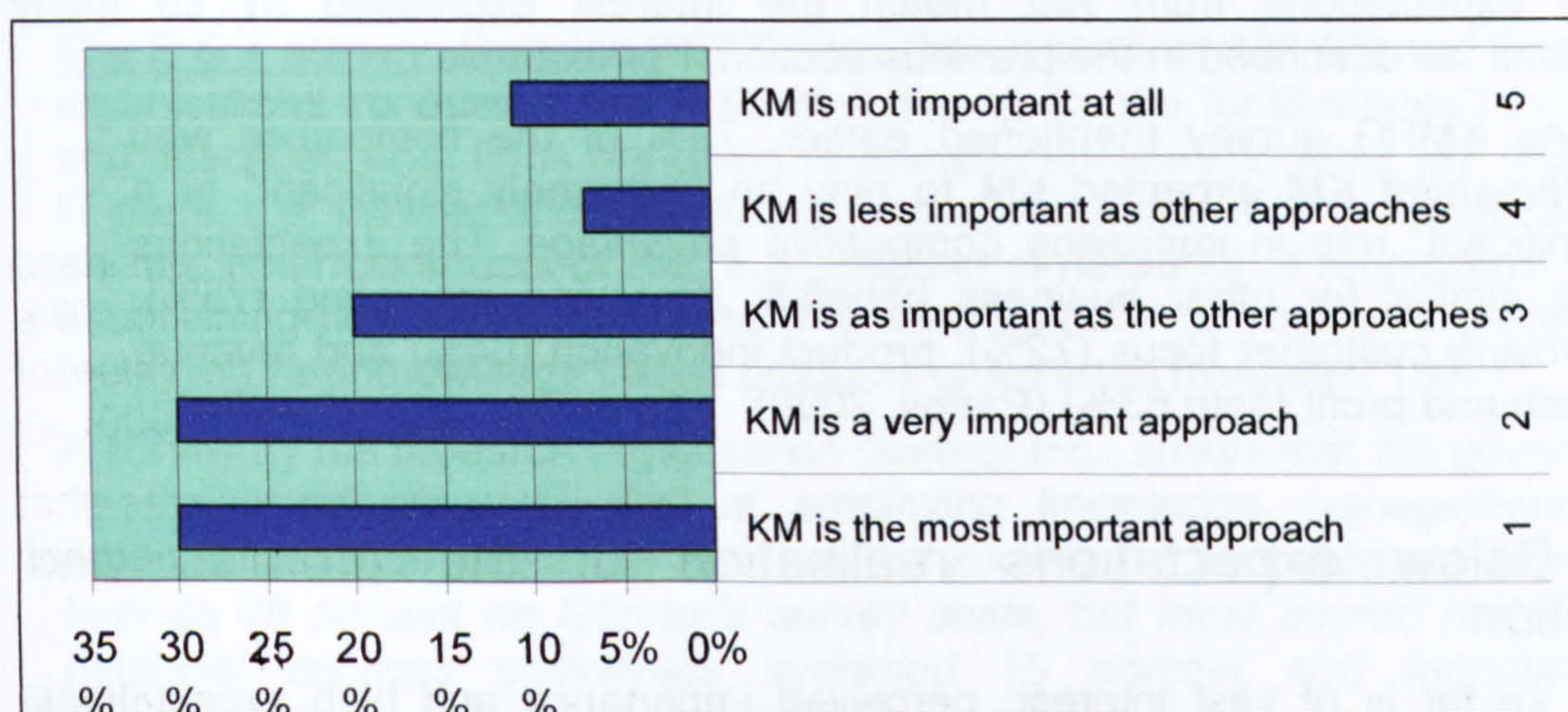


Figure 4-7: The importance of KM: KnowledgeBoard survey

### **"There is significant interest in KM"**

Therefore, the **interest in implementing KM** continues to be very high since it was introduced in the early 90's. Here are some indicators:

Prusak (1999) suggests looking at attendance of Knowledge Management conferences as a good indicator for interest. In 1999 it reached over 10,000 in the US alone. Another indication is the number of companies that have KM projects – for example 68% of the fortune 500 companies have initiated KM projects.

In a survey conducted in the financial services sector, 70.5% of the respondents said that their organisations are interested in KM: 33% already have KM programs in place, 8% are in the process of setting up such initiatives, and 29.5% examine the need for KM programs (Dore, 2001).

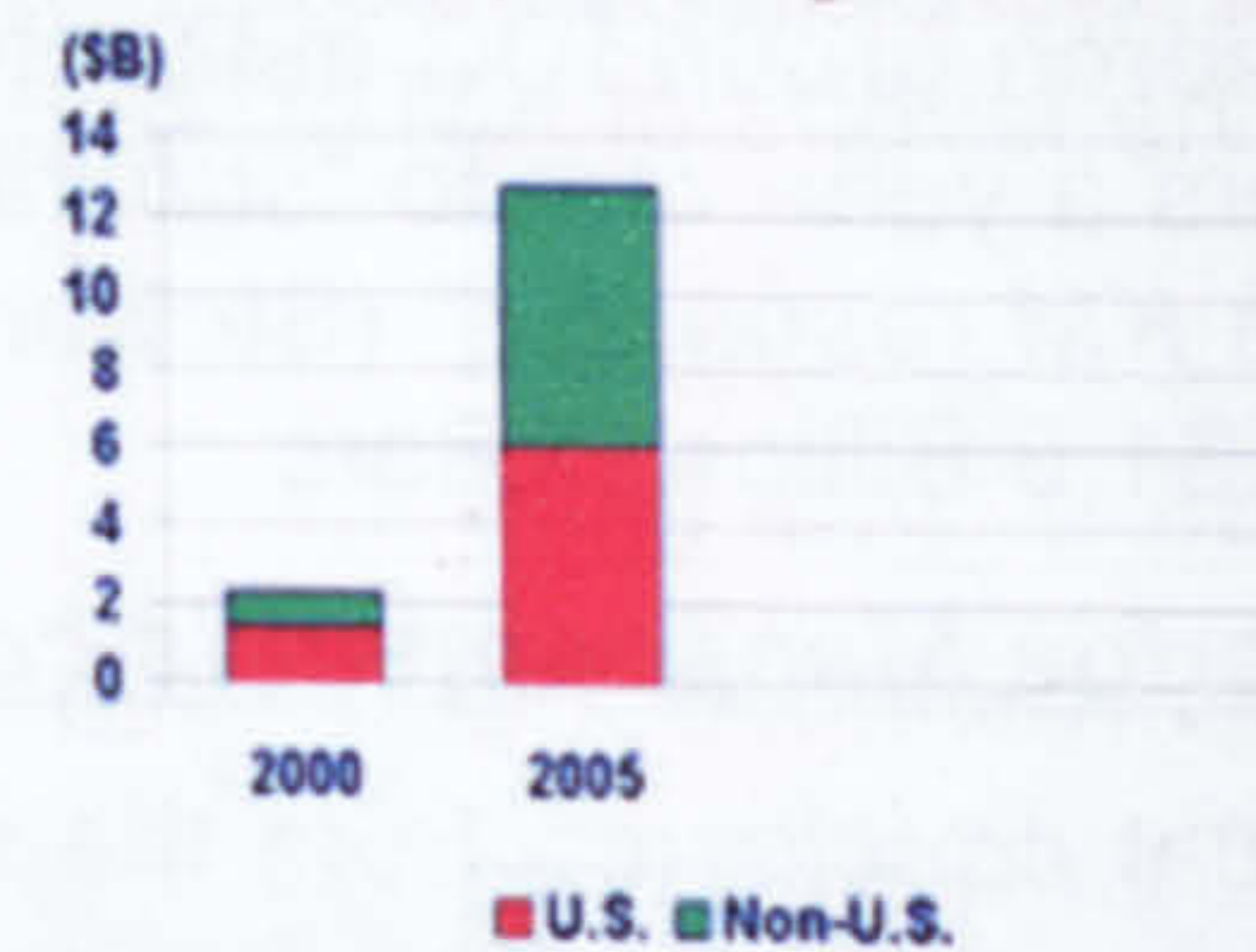
Similar results were reported in a survey conducted by the consulting group KMPG in 423 European and American organisations. 81% of the organisations



said that they had or considered having KM programs (38% had one in place, 30% were currently in the process of starting a KM program and 13% were considering setting up a program) (Parlby, 2000).

According to a survey by IDC, Worldwide, revenue for Knowledge Management services will jump from \$2.3 billion in 2000 to \$12.696 billion in 2005, a 40.7% compound annual growth rate. KM services include consulting, implementation, operation (outsourcing). Today, 25% of all organisations employ a CKO (Chief Knowledge Officer), or high-level KM position. By 2005, that number is expected to grow to 80%." (KMpro, 2002b)

#### Worldwide Knowledge Management Services Spending, 2000-2005 (\$B)



Source: IDC #24538, May 2001

IDC  
Analyze the Future

Figure 4-8: IDC survey - Spending on KM (Kmpro 2002)

#### Expectations from KM are very high

The high expectations from KM match the interest expressed by so many organisations, as described in the previous section. For example:

In the KMPG survey mentioned earlier, 79% of the companies who implemented KM expected KM to play an "extremely significant" or a "significant" role in improving *competitive advantage*. The expectations were similar for other business benefits: improving marketing (75%), improving customer focus (72%), product innovation (64%) and revenue growth and profit (both 63%) (Parlby, 2000)

#### 4.6.2 Below expectations realisation of the promise and satisfaction

The story so far is of vast interest, perceived importance and high expectations. However, the author identified in the literature a significant gap between expectations and actual satisfaction with KM. There is a fair amount of perception out there in the marketplace that knowledge management has set **very high expectations** for itself, which it has not met.

Barth (2000) explored many "*KM Horrors Stories*". He claims that KM initiatives fail, perhaps as often as they succeed. The many failures are not discussed in industry conferences, but even after completed deployment projects, knowledge workers still cope with information overload, lack of knowledge sharing and duplication of efforts. The ultimate horror story is about companies **failing to follow through on their commitments** to Knowledge Management. Even the consulting companies that theoretically are marketing KM to their clients cannot justify their own investments. "As a result, the high-flying and aggressively proselytising advocates of KM that formerly graced the podiums of now-defunct KM conferences are finding that their staffs are being cut, their projects go unfunded and their CKO-ships are liable to be reorganised out of existence." (Barth, 2000).

This section provides some indications and anecdotes that point toward low satisfaction with KM. They are grouped into 5 categories:



- Data from large scale surveys covering the attitudes of managers at many European and American organisations.
- Testimonies of professional who led KM programs.
- The continuous search for the ultimate KM killer applications.
- The recycling of few success stories
- The layoffs of KM professionals.

### **Indication I: Data from surveys:**

There is growing body of data from surveys conducted in the area of Knowledge Management.

**The FT survey:** A survey in the financial services revealed that only 5% of the organisation implementing KM programs perceived them as highly effective, 19% think they are “effective” and 76% claim it is “too early to tell”.

**The KMPG survey:** the survey reports that even the companies with active KM programs fail to overcome the basic KM problems such as: time to share knowledge (62%), failure to use knowledge effectively (57%) and difficulty to capture tacit knowledge (50%) (Parlby, 2000)

**The E & Y survey:** Ruggles (1997) describes a study of 431 US and European organisations conducted by the Ernst & Young Centre for Business Innovation and describes what firms are doing to manage knowledge. Most are doing the IT parts, e.g. Intranet and Knowledge Repositories, but think that they “**should do**” the other constructs of KM, e.g. creation of networks of employees (CoP), establishing new knowledge roles, mapping sources of internal expertise and launching new knowledge based products or services (Ruggles, 1997).

A survey by the research organisation Gartner Inc., shows that the government “*is the worst group by far*” at employing knowledge management “*The organisations that make the best use of knowledge management scored as high as 78 percent on Gartner’s survey scale, but most scored much lower. Financial services companies averaged 15 percent and manufacturers averaged 10 percent*” (Matthews, 2002).

**The Bain survey:** A comprehensive set of relevant data comes from the annual survey of management tools and techniques, administered by Bain (2001) since 1993 (Rigby, 2001). The survey is based on questionnaires sent to executives in 15 countries in North America, Europe and Japan. The survey covers 25 management tools, including KM and TQM. The 2001 results for KM are consistent with results of previous years:

- ☐ **Tool utilisation** was low– 32.5% (vs. mean of 41%) – see following figure.
- ☐ **Tool satisfaction** was low (2<sup>nd</sup> lowest) – 3.6 (vs. average of 3.87, on 1-5 scale)
- ☐ **Defection Rate** was high then average– 12.6% (vs. average of 11%).
- ☐ **Promise-results gap:** Of all contemporary management techniques, knowledge management demonstrated the biggest gap between promise and results realised.



## Knowledge management

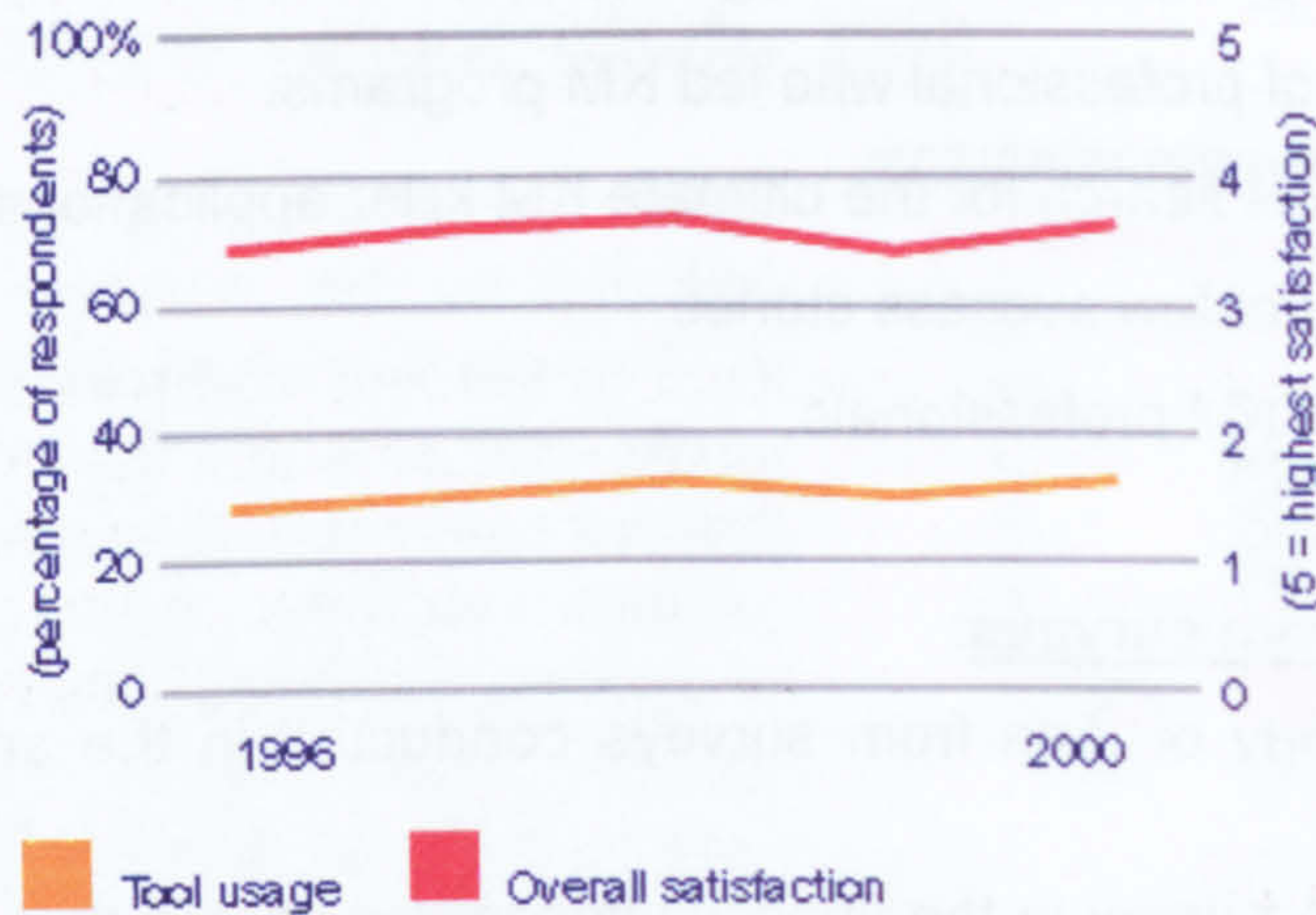


Figure 4-9: Bain (2001) survey: Usage Level (Rigby 2001)

**Lucier and Torsilieri research** 108 companies were investigated in a research titled “can knowledge management deliver bottom-line results?” (Lucier and Torsilieri, 2001). They conclude: “we found no correlation between systematic management of knowledge and improved bottom-line performance. That is, we found that companies with extensive knowledge management programmes were not more likely to achieve improved bottom-line performance than companies without such initiatives”.

### Indication II: Confessions of leading KM leaders

Even some of the people that took an active role in KM programs admit that the failure rate is considerable.

Prusak (1999) admitted that half of the 220 KM projects he had monitored over the last 10 years were **sub-optimised**.

Lucier (1997) who was the first CKO at Booz-Allen & Hamilton and was involved in more the 70 KM programs within the company and its clients, estimates that one sixth of all KM programs will achieve very significant business impact, half achieve small but important benefits and the rest (half of them) will not achieve real business benefits at all. As a result, “a disturbingly high proportion of programs initiated with great fanfare are cut back within two to three years”.

### Indication III: still looking for the killer application

Many organisations, which “feel” that KM is important, are still looking for tangible business, **benefits**. The notion of identifying and starting a KM project with a “**killer application**” is very common. For example, in an article titled “*Idea management may help validate knowledge management*”, this product category is considered as such a killer application. “People have been waiting for five or six years for a reason to latch onto knowledge management...Idea management could rescue knowledge management from oblivion. It may provide some companies with their first real understanding of what is KM” (Kontzer, 2002).

### Indication IV: Recycling success stories

Another indicator is the relatively few success stories about strategic implementation and KM, and the ones that are reported are recycled in many papers (e.g. Dow Chemical, BP, Teletch, Hughes & the World Bank). The success stories are mostly about KM activities, and very few demonstrate significant tangible results (Davenport, 1997).



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## **Indication V: Layoffs**

Moore (2001) provides another interesting indicator to the situation of KM. Several companies, like Coca-Cola and Stanley Morgan, have appointed Chief Knowledge Officer, and after a few years lay them off.

### **A more critical view**

Moore (2001) goes beyond dissatisfaction with KM and warns that *“most current KM practices actually do more harm than good”*. He claims that the *“KM baby is indeed sick”*, due to focus on technology, and a series of management fads like re-engineering, flattered organisational structure, lean manufacturing and others, that neglected or even diminished the real asset of the organisation – the clever, motivated, well trained and experienced people.

## **4.6.3 Root Causes for the KM Situation**

### **4.6.3.1 Introduction**

The following section lists the many factors, which are discussed in the literature, as KM weaknesses, bottlenecks or risk areas.

The author starts by looking at several surveys that were already mentioned in the previous section, and sees how they identify and score the failure factors of KM. Then, the literature, which reports on KM, is explored. These and other factors are elaborated on. Storey and Barnett (2000), who explored cases of KM failure, commented that *“so far, insufficient attention has been paid to why these (KM) initiatives fail and the learning points have not yet being adequately explored”*. The author found the same, that there is very rich literature on KM, but very few systematic efforts to explore why its failure rate is so high. These factors are interlinked in many ways.

The author has classified the problems mentioned in the literature into 20 categories, which are grouped into four areas.

- Conceptual confusion as to the nature and scope of KM
- Cultural barriers
- Problems in the implementation of KM
- And problems related to the external and internal communication of KM.

The model is presented in the following figure:



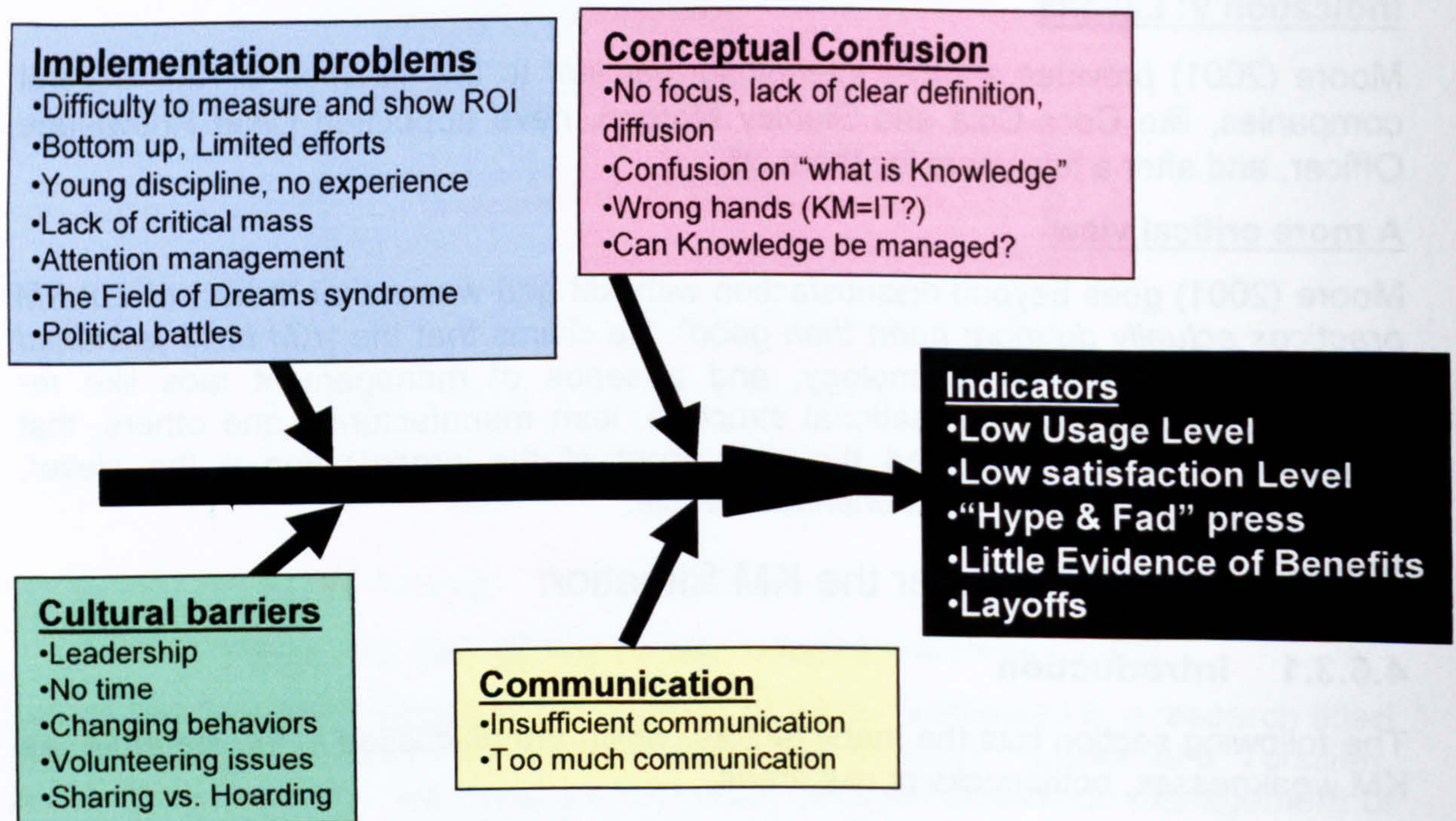


Figure 4-10: Root causes of KM

In the following sections, a detailed account on each group is provided.

#### 4.6.3.2 Conceptual confusion

*"Quick, what's the definition of knowledge Management? Don't know? Join the crowd! Welcome to the most "successful" fuzzy idea in the history of management" (McElroy, 2000).*

Here, the author highlights some of the more common confusions discussed in the KM literature. The picture is clear: one of a discipline which can be interpreted in many conflicting ways, based on opposing basic assumptions, addresses very different challenges and needs. The four confusion areas:

- What is the focus of KM?
- What is "Knowledge"?
- Can knowledge be managed?
- KM=IT?

#### KM conceptual problem 1: No focus, diffusion and lack of clear definition

Prusak (1999) points towards the perception of KM by many as a "black box" as a major risk factor. *"Practitioners read into it whatever they determine 'knowledge' to be".*

Firestone (2001) is even bolder in his criticism towards the current approach to KM: *"If we proceed on the present course of **loose talking and loose thinking** about the basic issues (of KM), there will never be accumulation in our knowledge about KM. There will never be improvement in KM practices...and ultimately there will be a movement away from KM as a source for useful solutions or the enterprise. KM will fail".*

De Long and Seemann (2000) report on a bitter battle between KM supporters and re-engineering activists in a pharmacological company. The KM advocates thought



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that Business Process Reengineering (BPR) would remove from processes the slack time required for knowledge creation and thinking, while the BPR people thought that KM was nothing but a new fad. This is an example of conceptual confusion that KM frequently evokes.

Faran (2001) links the dissatisfaction of managers with KM the lack of focus. *"KM programs did not set clear and distinctive objectives. They are is too wide to handle it as a concrete tool, and therefore KM programs were quickly diffused"*.

### **KM conceptual problem 2: what is "Knowledge", The "Repository paradigm" and "K as a thing".**

There is fierce disagreement about the nature of the "Knowledge" which organisations need to manage. While some refer to "explicit knowledge" (things like reports, facts etc.) as the subject of KM, others argue that KM is about the articulation, transformation and leveraging of implicit knowledge.

Gilmore (YEAR), a member of the original Lotus Notes development team, once believed, like many in this area, that KM was about setting up repositories, then asking people to populate them, twist arms to keep them updates, and hope that people would eventually use the repositories. Now he criticises and blames this approach as the main source for the failure of KM to meet its expectations. *"It's a Stalinist fantasy that you can expect to collect enough knowledge, that everyone would contribute, that you could keep it fresh enough to be meaningful"* (Vicere, 2000).

Similarly, Prusak (1999) claims that the single biggest enemy of successful KM is the wrong choice of metaphors. The worst choice is seeing knowledge as a thing to be measured. *"You can't quantify knowledge more than love or trust"*.

Stewart (2002) thinks that in many cases, KM programs need to provide **Cafes, not Libraries**. There is a significant risk in the overemphasis on 'knowledge repositories' that can damage creativity. *"One of the great dangers of knowledge management technology is that it can lead you to invest in systems for reusing knowledge when innovation is central to your company's value proposition. If nothing else, that's a waste"* (Stewart, 2002).

### **KM conceptual problem 3: Wrong Hands, Wrong Focus (Does KM=IT?)**

Many authors attribute the low success of KM to the over dominance of the IT discipline. In too many KM programs, most resources are invented in IT, while the real bottleneck lies in other issues such as culture and processes. For example, in the Ernst & Young survey (Ruggles, 1998) only 13% of respondents thought that *"Overcoming technological limitations"* is a difficult issue that blocks KM.

Moore (2001) explains that the companies have heralded the importance of KM and left it mainly to the IT department. Senior executives love to have complex issues placed somewhere within the organisational hierarchy, and thought that KM probably involves computers. However, as the fundamental issues are around behaviours and people, not Intranets and repositories, it is impossible for them to be successful.

Phillips (2000) reports on an ongoing debate within the IT consulting industry regarding the differentiation of KM from other previously popular IT management philosophies.

Strassman (2001) emphasises that in the case of KM, *"doing the right thing is much more important than doing the thing right"*. Trying to implement KM with the best software, take advice from the best consultants and starting a well-funded project



may be doing KM the right way. But this still does not guarantee that KM will deliver the expected benefits.

Owens (1999) believes that one of the obstacles in implementing KM is *that "the KM buzzword is abused by software vendors. It is sad to see how quickly discussions about KM degenerate into discussions about databases, repositories and other technologies"*.

In an interview titled "Does KM =IT?" Hildebrand (1999) claims that KM is associated too strongly with Information Technology. *"Knowledge management is in danger of being perceived as so seamlessly entwined with technology that its true critical success factors will be lost in the pleasing hum of servers, software and pipes. As vendors label their document management, database or GroupWare products "knowledge management solutions," executives can be excused for mistaking the software for the solution. It's not"*. Hildebrand (1999) He continues to expose three myths related to KM.

- |      |                                                                                                          |
|------|----------------------------------------------------------------------------------------------------------|
| I.   | Knowledge management technologies deliver the right information to the right person at the 'right time'. |
| II.  | Information technologies can store human intelligence and experience.                                    |
| III. | Information technologies can distribute human intelligence                                               |

#### **KM conceptual problem 4: can knowledge be "managed"?**

Several practitioners and theorists in the field of KM actually do not think that knowledge can be managed. For them, the term "Knowledge Management" is misleading and must be avoided.

#### **4.6.3.3 Cultural barriers to KM**

De Long and Fahey (2000) believe that *"Organisational culture is increasingly recognized as a major barrier to leveraging intellectual assets"* They based their diagnosis on a framework of four cultural barriers to successful implementation of knowledge management:

- *"Culture- and particularly subcultures - shape assumptions about what knowledge is and which knowledge is worth managing.*
- *Second, culture defines the relationships between individual and organisational knowledge, determining who is expected to control specific knowledge, as well as who must share it and who can hoard it.*
- *Third, culture creates the context for social interaction that determines how knowledge will be used in particular situations.*
- *Fourth, culture shapes the processes by which new knowledge - with its accompanying uncertainties - is created, legitimated, and distributed in organisations" (De Long and Fahey, 2000).*

As an example, here are some attitudes toward the question of "forcing KM":

Once designed, how can desired KM behaviours and conditions be changed in the organisation?

In the Ernst & Young research described earlier (Ruggles, 1998), the problem of *"changing people's behaviour"* was stated as the number one difficulty.

McElroy (2000) shows that there are two cultural approaches to KM. The first is to *"simply order people into complying with set of new behaviours based on new set of*



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rules. Unfortunately, the best we can hope for under this approach is temporarily compliance and a real headache of enforcement". The second approach is based on volunteering". McElroy (2000) supports the same attitude; he states that knowledge can only ever be volunteered. Snowden (1999), from IBM, agrees: He states that participation in process improvement, quality management exercises and the like can be enforced: it may not be the best way, but it can be made to work. In contrast, a knowledge management program requires the active and willing participation of volunteers if it is to have any hope of succeeding (Snowden, 1999).

#### **4.6.3.4 Communication Barriers**

Here two opposing barriers are seen:

- Lack of communication of what KM is, and how it is linked to the organisation and personal needs
- And too much communication (of a certain type).

##### **KM communication problem 1:Insufficient communication**

In many surveys, which investigate the barriers to effective KM, a common theme high in the list is lack of understanding of KM benefits. For example, in a survey of KM at financial organisations, this factor was rated as the first barrier, with 50% respondents admitting that they have no understanding of KM benefits, and an additional 40% saying that their understanding is not sufficient (Dor, 2001)

In the KMPG survey cited above, the barrier to KM which was scored the highest was *"lack of user uptake due to insufficient communication"* (Parlby, 2000).

One of the members of an online KM community joins the many other writers who complain about this problem. *"One of the reasons for this difficulty (to have senior management buy-in) seems to be our inability to articulate to the senior management in a persuasive and convincing way, what KM is and why it needs to be a corporate priority. The way KM is described; it is often seemed to be fuzzy and amorphous by many senior business managers"* (Ash, 2002)

Ash (2002) agrees that communication is the missing element of KM: *"after a two year review of the literature written by the best thinkers in the KM field, I kept thinking something important is missing. There seemed to be a gap somewhere in the emerging jargon, the theories, and the strategies. It finally came to me. Communication!"* (Ash, 2000). The communication of the KM concepts, values, initiatives, strategies and tools, in the best case, are far from professional. There are few exceptions, like the work of Edvinsson (2002) in communicating Skandia's IC and KM programs to external and internal stakeholders (Edvinsson, 2002).

Why is the communication so poor? One explanation was already provided in the previous section – the conceptual confusion over the definition of KM.

##### **KM communication problem 2:Too much communication – KM as a Fad and Hype**

In recent years, KM has been linked in many papers to management hypes and fads. In the author's literature search he found 550 references to "KM & Fad" and 360 references to "KM & hype" (Lexix-Nexix search engine, January 2002). Paradoxically, KM is suffering from too much and too little communication at the same time.



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Several authors criticise KM as being a passing management fad. Others argue that KM is a serious business concept, but its perception as being a management fad limits its impact.

Hilmer and Donaldson (1996) explore the phenomena of management fads in their book *"Management redeemed – debunking the fads that undermine corporate performance"*. They focus on other management fads; their insights can be used to analyse KM. Their conclusion is that companies need to be aware of fads and replace dogmas and seek novelty by the best traditions of the established professions. The tendency to name so many approaches, services and tools as "KM solutions" has fostered the opinion that KM is no more than a new fad to sell consulting services and fantasy software to executive managers, who do not fully understand the work required to make KM systems remunerative (Phillips, 2000).

Schrage (2001) wrote an article titled ***"Knowledge Management? That's so 2001. What you want – no, what you need, is something newer, something better, something guaranteed to get results"***. His cynical conclusion stated that companies need to move on to Wisdom Management.

Bean (2002) a participant of the KnowledgeBoard European KM community presents a striking description of the lifecycle of management fads. The author believes that KM has already followed at least the first 14 steps of Bean's (2002) model, described below:

1. Innovative practices spotted in Fast Companies
2. Ideas written up in Fast Company Magazine
3. Academics and Consultants conceptualise ideas and giving them a new name
4. Ideas published in Harvard Business Review
5. Consultants leaping on to the conference circuit and meeting with the top management of Big Slow Companies
6. Books written (or ghost-written) on Big Idea.
7. Other Consultants dusting down and reshaping their Old Ideas to fit this new Big Idea, thereby obscuring the kernel of value within the original concept.
8. Yet more consultants use the interest in this New Big Idea as a vehicle to promote their Old Big Ideas.
9. Analyst groups forecasting that 50% of Fortune 500 companies will adopt Big Idea within next 3 years with a probability of 0.8.
10. Individuals working in Big Slow companies beginning to take an interest. A rookie Guru emerges within the company, reads all the books, attends the conferences and claims custody of the Big Idea. Debates may ensue on what the Big Idea is, and is not. (e.g. that is not CRM, that is Customer Service).
11. Cynics claim that Big Idea contains nothing new and it is just good business practice, anyway.
12. Software companies reposition their software to execute the Big Idea, or more often, a small part of it.
13. Executing the idea degenerates into implementation of an IT system - a guaranteed recipe for failure, since no such system will succeed without the corresponding change to process and culture.
14. Big Idea is lampooned in a Dilbert cartoon.
15. A few smart companies benefit from the Big Idea. Whatever it was that the Big Idea was supposed to improve gets worse in many other companies. Cynicism increases and off we go around the loop again with increased probability of failure each time. (Well we tried X and that did not work!)

#### **4.6.3.5 Implementation problems**

Another explanation of the gap between the potential benefits of KM and its actual results is attributed to difficulties in the actual implementation.



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### **KM implementation problem 1: No measurement, No auditing**

According to a survey by KMPG consulting company, only 57% of the companies with KM programs in place actually measure and audit progress. Establishing a measurement system for KM is very difficult. However, taking the notion of Peters (1986) that *"what gets measured, gets done"*, lack of measurement can reduce effectiveness of KM programs. Denning (2002) explains why lack of measurement in KM is dangerous: *"Without measurement, there is an ever-present danger of premature abandonment of successful efforts, or alternatively, of complacent continuation of unsuccessful efforts when course correction is needed"*.

Hylton (2002) claims that many KM initiatives fail because they are not based on hard facts. *"Much of the mistakes of both the early and more recent adopters of KM can be traced to the serious oversight of not including the knowledge audit in their overall KM strategy"*.

### **KM implementation problem 2: Difficulty to measure ROI**

In the Ernst & Young survey, the problem of *"measuring value and performance of knowledge assets"* was chosen by the respondents as the second most difficult issue in KM (Ruggles, 1998).

Strassman (2000) writes that the difficulty of proving that spending on KM increases profits has plagued KM proponents. However, in his opinion, *"the search for direct relationship between KM and profits is waste of time. KM is a phenomenon that eludes the tools of conventional financial analysis"*.

Brompton (2000b) reports on many KM programs that are working as planned. *"The activity is apparent and so is the cost. But where are the benefits?"* And the problem is that direct metrics for benefits are very difficult to define.

Phillips (2000) summarised the attitude of many executive towards the overlapping, well intentioned and partially successful initiatives in two questions: *"Where is the ROI?"*, and *"What actual difference will KM make in my organisation?"*

The criticality of measurement is more important in some sectors. One example is the financial sector, where *"hard measures give knowledge management credibility"* (Owens, 1999).

### **KM implementation problem 3: Bottom Up, limited efforts programs and lack of critical mass**

Byrne (1997) points out the limited attempts at using new techniques such as KM tend to produce poor results. Smart companies tend to customise a limited number of ideas, win top-down support for them, and devote considerable effort to make them work.

Owens (1999) reports from his experience as a "KM missionary" that to be effective, Knowledge Management initiatives and programs must involve everyone in the organisation. This can be enabled only through top-down leadership of the highest level of the organisation. Limited scale implementation in islands has no real impact.

Stewart (1996), in an interview for an online KM community, lists several reasons for the failures of KM programs. The first refers to the limited local scope of most of them. *"If knowledge management is to get serious attention of the senior management of a company, the KM initiative needs to be perceived as evolving into a company wide initiative, well integrated into all business processes. However most of the case studies I reviewed so far seem to reflect KM adoption limited to a few locations/ business processes in a concern"* (Ash, 2002)



Brompton (2000b) agrees with Stewart and claims that in many organisations, KM projects start when a local operational need is identified. This can lead to many stand-alone projects that are overlapping. This leads to duplication of efforts, ineffective solutions, and confusion of the end users. The challenge to integrate the projects, and fit them together into a greater KM program, is often unmet due to organisational barriers.

The part-time approach is part of the problem. Many organisations go halfway in their KM efforts. They consider it as a "nice to have" approach. A participant in an online KM forum suggested that *"one of the reasons stated for the failures of KM is people already overloaded with other assignments are given responsibility also for KM projects"*.

#### **KM implementation problem 4: Lack of Time to "Manage" Knowledge**

Surveys consistently reveal that "lack of time" is the biggest reason KM projects fail. Most knowledge workers are overloaded with their routine tasks, and perceive the time require for knowledge contribution and sharing as an unaffordable overhead. (Parlby, 2000).

Duvall (2002) reports that in a recent survey most respondents rated the lack of time on the part of employees to actively make use of the KM system as one of the two major obstacles to KM implementation.

This problem is closely related to "Lack of integration of KM into daily work (Parlby, 2000).

Brompton (2000) believes that most people like to share knowledge and like to be consulted. The problem is that the more knowledgeable employees are the most demanding ones, and may not continue the requests for their help and contribution. Furthermore, managers are reluctant to open the door to their best people.

#### **KM implementation problem 4: Young discipline, no scientific basis and lack of experience**

Although the issue of KM has been discussed and practised for more then a decade, one of the difficulties in implementing it is the lack of roadmaps or "cook books" to guide its implementation (Noles, 2000).

Faran (2002), in an article titled "Managers are disappointed from KM", suggest two reasons for the low level of usage and high rate of defection from KM: *"Shallow Academic Infrastructure"* and *"lack of professionalism of large portion of the people involved in KM, especially consultants"*.

#### **KM implementation problem 5: Attention Management**

Implementers of new management tools always mention "top management commitment" as a critical success factor. KM is no different. The need to identify a high-score sponsor is highlighted in most KM lists. It is no wonder that in a survey about the impediments to knowledge transfer, *"top management failure to signal importance"* is scored very high (Ruggles, 1998).

Brompton (2000) sees lack of sponsorship or a poor one as more critical to KM programs than to programs in other areas. Poor sponsorship stems from implementing KM in a bottom-up mode, leading to lack of sponsor or a low-level sponsor that has little or no authority. Management often blocks such projects by not allocating the needed resources or attention. In other cases, the sponsor is a senior manager that has genuine interest in the KM program, but then sponsorship dies, as he moves to another job, leaves the organisation or loses interest.



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Earl (1999) has explored the role of the CKO, by interviewing many holders of this new title. Many of them stressed that the most important resource is the CEO support and sponsorship. One is quoted as saying *"if the CEO changes his mind (regarding importance of KM), I am dead"*.

But why is it so difficult?

De Long and Seemann (2000) point out that the problem of capturing and maintaining the attention of managers becomes increasingly difficult. The challenge is to trigger and sustain the "activity thresholds" of managers so they continue to pay attention to complex and long range problems such as leveraging the organisational knowledge, while many other things demanding their attention. The continuous pressure on managers to demonstrate tangible progress and attain their performance objectives worsens this problem. According to a Bain survey, large organisations run, on average, 11.4 management tools in parallel, (Rigby, 2001). This implies that even if the manager is relieved for a short while from his/her immediate and urgent short-term responsibilities there are several management tools competing for his attention, even within his/her own organisation.

Other explanations have already been mentioned:

- Difficulty to show ROI and
- Conceptual confusion and unclear definition of KM in the context of the business objectives.

The problem is not only with the support of top management. In the IDC survey (Duvall, 2002) lack of internal support of the KM systems (by all levels) is one of the most common challenges to KM implementation.

#### **KM implementation problem 6: The Field of Dreams syndrome**

KM people often assume that if they build a good solution, the intended users will use it. This trap is common to both technological efforts (sophisticated KM computerised systems) and more people centred approaches. What the initiators forget to ask is *"what is the business problem that this application is trying to solve"* (Barth, 2000).

O'Dell and Grayson (1998), when discussing how to establish Best Practices sharing culture, describe the common case in which *"the first reaction to the desire to share best practices is frequently to create a technical solution, usually an online database"*. However, a critical question needs to be asked: *"If we build it, will they come?"*

#### **KM implementation problem 7: Political battles**

De Long and Seemann (2000) add the political dimension to the list of barriers to KM. Attempts to manage knowledge often leads to potential for serious conflicts between departments or business units. Frequently, the results are costly KM initiatives that are disconnected from strategic objectives, mired in political battles, or organisational inappropriateness.

De Long and Seemann (2000) also discuss the conflict over control of the KM franchise. As KM gains credibility in an organisation, it becomes a potential source of resources and political power. Roles such as IT or change management are seen as appropriating the concept for political gains. This political infighting among proponents of KM diverts attention from the more important debate and focus on the concept's potential strategic value for the company, strengthens the voices opposing KM, and leads to competing initiatives.



#### 4.6.4 What the surveys say?

Over the past few years, researchers as well as consulting companies administered several surveys exploring the difficulties and barriers to KM.

The main findings are consistent. Several factors score high in most of them: lack of management commitment, lack of time, lack of understanding of the concept.

Consistently, the IT issues score low, and are not perceived as a bottleneck. As one of the surveys concludes: *"It is not the technology that is holding organisations back, but the lack of strategy and failure to build KM into the organisation's day-to-day operation and its culture"* (Parlby, 2000). As an example, presented here is the summary of the survey conducted by the consulting company KMPG (Parlby, 2000):

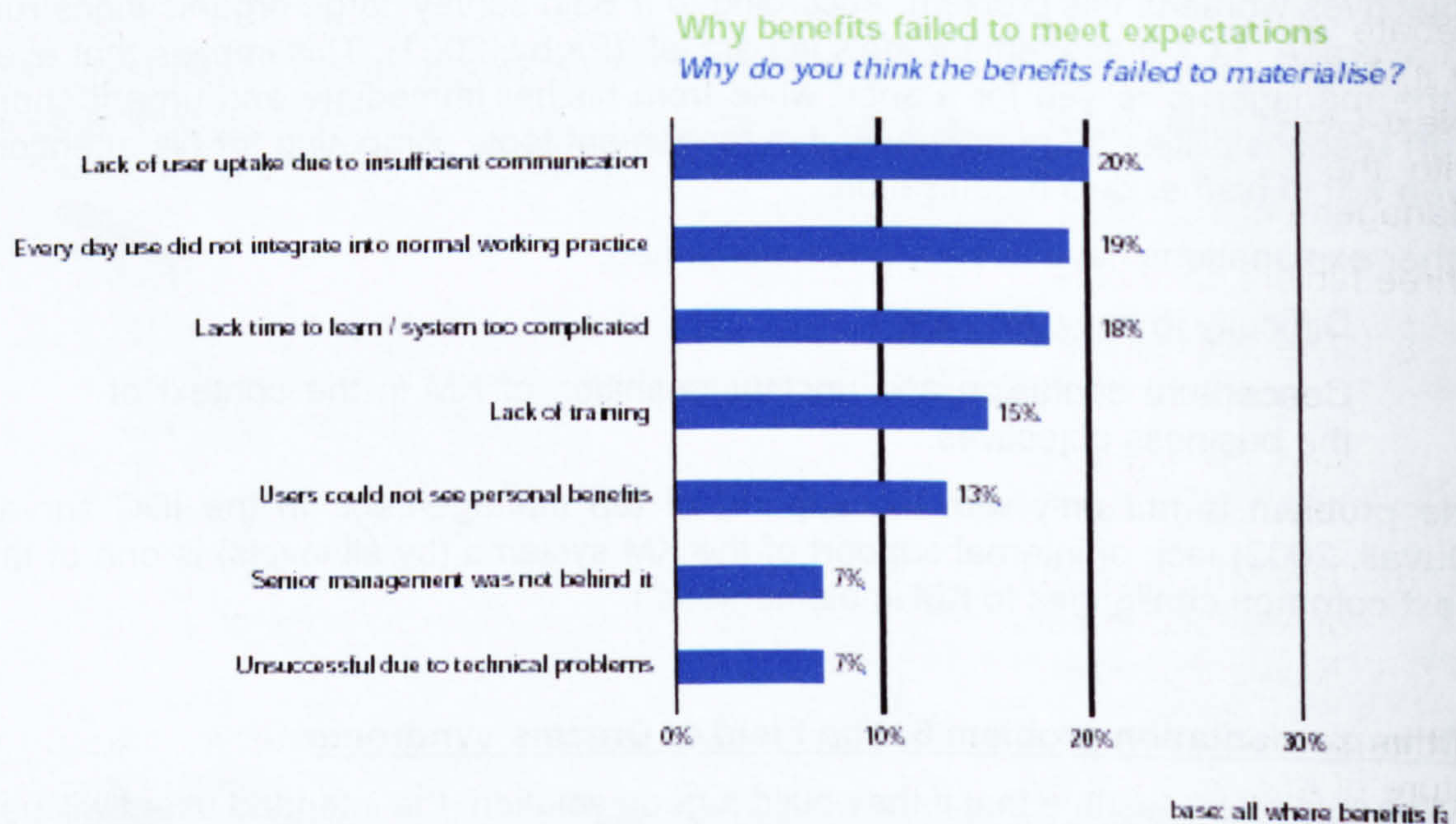


Figure 4-11: Summary of KMPG survey results (Parlby, 2000)

The survey conducted by Ruggles (1998) within 431 American and European organisations maps difficulties according to slightly different definitions. However, like in most other surveys, the culture behaviour is the most significant problem.

Attracting and retaining talented people	9%
Identifying the right team/leader for knowledge initiative	12%
Overcoming technical problems	13%
Making knowledge available	15%
Setting the appropriate scope of knowledge initiatives	24%
Defining standard processes for knowledge work	24%
Mapping the organization existing knowledge	28%
Justifying the use of scarce resources for knowledge initiatives	34%
Determining what knowledge should be managed	40%
Measuring the value and performance of knowledge assets	43%
Changing people's behaviour	56%

Table 4-3: Biggest difficulties of KM (Ruggles, 1998)



## 4.6.5 Evidence from the Author's experience

Being a KM practitioner for five years, the author has experienced many of the above problems. These are demonstrated in details in a specific company (TechCom case, Chapter 10) and in a national KM case (Chapter 11).

## 4.7 Future Directions

### 4.7.1 Introduction

The author has already described KM as an emerging discipline. There is an ongoing debate within the research and practitioners communities as to the future directions of it. There are even conferences dedicated to the future of KM, e.g. the APAQ 2002 "Next-Generation Knowledge Management". Similarly, there are research projects with the same title e.g. the EC's project "VISION Next Generation Knowledge Management".

Three factors contribute to the intensity of this debate:

- The difficulty to define what knowledge management is, as was described in the first section of this chapter.
- And the significant gap between the promise of KM and its actual results and user satisfaction, as demonstrated in the previous section.
- The growing body of information on the understanding of the concept of KM, and in particular lessons-learned from the experience of about 10 years of active KM programs in diversity of organisations.

In this section the author points towards several trends and approaches toward the future of KM, as discussed in the KM literature. This discussion is important because it puts the thesis, in one specific potential direction, in the context of the overall thinking about the future of KM.

The author describes those future directions in one unifying structure – the move from one end of a continuum toward the other end. Several continuum sets are suggested.

From	To
Technology-centric	People-centric
Reuse	Innovation
Process oriented	Results oriented
Uni-disciplinary	Multi-disciplinary
Knowledge as 'thing'	Knowledge as relationships

*Table 4-4: future directions of KM*



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#### 4.7.2 Continuum One: From Technology Centric to People-centric

The overwhelming focus, in most early KM programs, was on Information Technologies solutions to support the capturing, storing and retrieval of information. This was one of the major reasons for their failure, according to many sources (Owens, 1999).

The claim that IT is only an enabling tool is discussed by many people, for example, Moore (2001) holds that *"as the fundamental issues are around Behaviours and people, not Intranets and repositories, it is impossible for (IT-centric KM programs) to be successful"*.

An indication for the need to move from technology centric to people centric focus is apparent in most of the surveys that explored the bottlenecks for successful KM. For example, in one survey 56% of the respondents thought that "changing people behaviour" is a considerable difficulty, while only 13% pointed toward "overcoming technological difficulties" as a problematic area (Ruggles, 1998).

In an article titled *"What may lie ahead for KM?"* Karl Wijn (2001) predicts that *"overall, KM will become more people-centric because it is the networking of competent and collaborating people that makes successful organisations"*

There are some indications that this shift is already happening: there is growing emphasis on people centric tools for KM, such as Communities of Practice, Story Telling, trust-creation mechanisms and anthropological approach to KM.

It is interesting to note then even the IT industry people take partial role in this move. Naturally, they do not argue that IT roles should decrease. However, they do realise that in the past there was over emphasis on the management of documents as the cornerstone of KM, while in the future *"document-centric functions will always be central to knowledge management, but they have acceded their exclusive hegemony to make room for people-centric collaborative functions"* (Russom, 1999).

#### 4.7.3 Continuum Two: From Reuse to Innovation

In the early phase of KM, there was a focus on improving the efficiency or productivity of the employees, but providing them with better tools to store, retrieve and reuse information and avoid the phenomena of *"re-inventing the wheel"*. Drucker (1996) crystallised this notion by saying that *"The most important contribution management needs to make in the 21st century is similarly to increase the productivity of KNOWLEDGE WORK and the KNOWLEDGE WORKER."*

However, there is growing number of academics and practitioners alike that claim that KM should focus more on Innovation of new knowledge than on reuse of existing knowledge (Ruggles, 1997).

A good way to illustrate this move from Reuse to Innovation is to follow the history of the NIMCube project, in which the author took an active role (Dvir, Pasher and Roth, 2002). NIMCube was a research project in the area of KM, funded by the European Union and conducted by a consortium of several academic and industrial European organisations. Throughout its lifecycle, the focus of this project gradually moved from the Reuse to Innovation. This move is described in the following time-line:



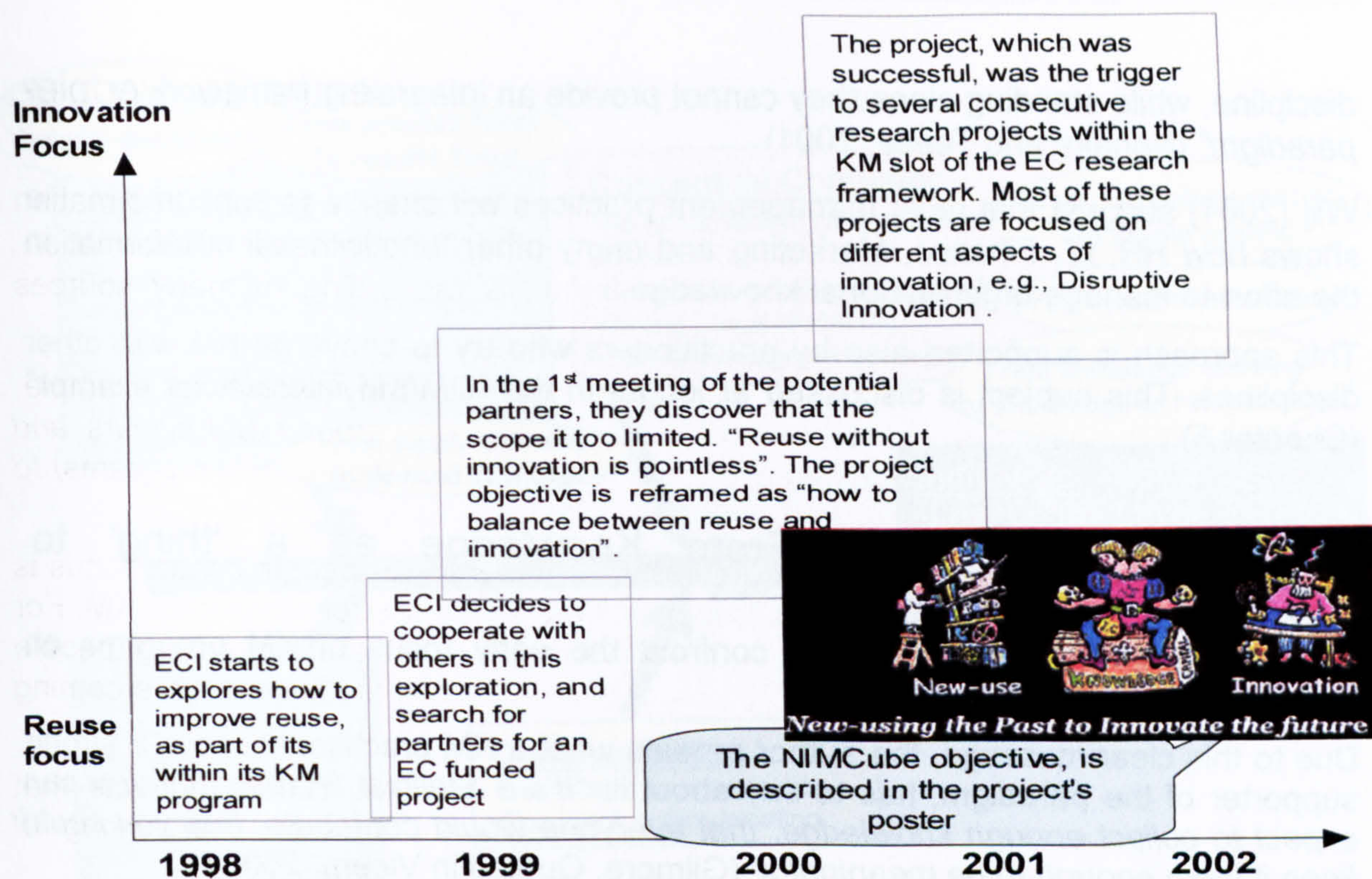


Figure 4-12: From Reuse to Innovation: NIMCube project timeline

#### 4.7.4 Continuum Three: From Process oriented to Results oriented

Many KM initiatives focused on enhancing the capabilities, structures, tools and processes of the organisation to "manage" knowledge, e.g., to capture, store, share and use it. However, there is a growing group of academics and practitioners that feel discomfort with this approach, and suggest focusing on achieving the actual results than on improving the underlying KM infrastructure. Lucier and Torsilieri (2001), for example, are convinced that *"a buttoned-down results-driven approach is the only path to achieving significant input from knowledge for the vast majority of companies"*. They claim that most sharing-enabling initiatives have and will fail. This is why the *"results-driven practitioners will increasingly disassociate themselves from the term 'Knowledge Management'"* (Lucier and Torsilieri, 2001).

Linked to the need to focus on results, there is an on-going complaint about the difficulty to measure or even demonstrate ROI on KM (Ruggles, 1998). This is one of the reasons for the growing focus on Intellectual Capital accounting, which promises to link the intangible assets of the organisation (including Knowledge) to its financial results (Edvinsson, 2001).

#### 4.7.5 Continuum Four: From Uni-disciplinary to multi-disciplinary

Several researchers are pointing toward the need to move towards more extensive integration of KM and other management approached. For example, Nonaka and Teece (2001) when they discuss future research directions for KM, suggest that *"properly understood, the knowledge management umbrella can be a convenient rubric for integrating important work in accounting, economics, entrepreneurship, organisational Behaviour, philosophy, marketing, sociology and strategy"*. They claim that each of these fields can contribute important insights into this integrated KM



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discipline, while standing alone they cannot provide an integrating framework or “new paradigm” (Nonaka and Teece, 2001).

Wij (2001) suggest that most management practices will change to support KM. He shows how HR, IT, Finance, Marketing and many other functions will collaborate in the effort to manage organisational knowledge.

This approach is supported also by practitioners who try to converge KM with other disciplines. This subject is discussed at length in the “QM/KM interactions chapter” (Chapter 5).

#### 4.7.6 Continuum Five: From Knowledge as a ‘thing’ to knowledge as relationships

Many academics and practitioners confront the early focus of KM programs on “repositories” of knowledge assets.

Due to this clear message, the author repeats what a KM practitioner, once a strong supporter of the paradigm, has to say about it: *“It’s a Stalinist fantasy that you can expect to collect enough knowledge, that everyone would contribute, that you could keep it fresh enough to be meaningful”* (Gilmore, Quoted in Vicere, 2000).

What might replace the focus of KM programs on computerised or non-computerised stores of explicit knowledge assets, such as experts yellow-pages, lessons learned databases, expertise (embedded in artificial intelligence systems) etc?

Nonaka (1996) provides the theoretical framework for this shift and taught the whole KM community about the characteristics of Tacit and Explicit knowledge and the process which transform them.

The idea of “communities of practice” and a form of “networks of relationships” is gaining considerable interest in the last years, as a major part of KM programs. The assumption is that it is the interaction between the members of a community that is the most effective way to use and grow the individual and organisational knowledge (Wegner, 1998).

#### 4.7.7 Mapping future trends to current problems

Once the trends have been identified, the next phase was to explore whether the suggested trends address the problems of the KM community, as identified in the literature. In order to discover such possible links, the trends were grouped according to the problems groups. The author discovered that two of the four problems areas are addressed by these trends, namely “implementation” and “conceptual confusion”. Moreover, one of these trends, namely “multi-disciplinary approach”, is directly linked to the overall subject of the current research (QM/KM interactions).

The following figure shows the problems/trends map.



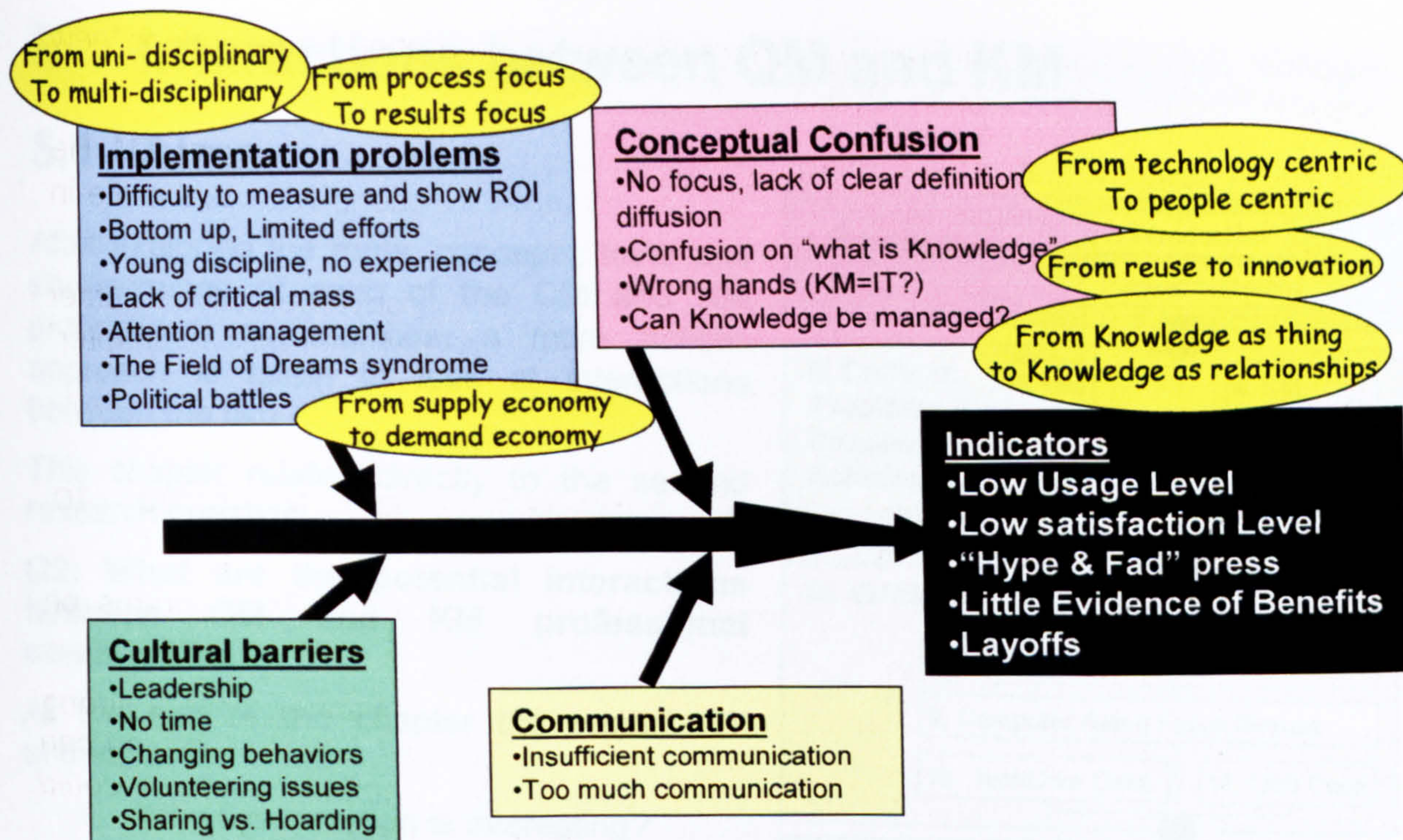


Figure 4-13: Mapping KM future trends to current problems

## 4.8 Conclusions

As a young discipline, there is no agreed definition of what KM is. The definitions, as well as models of KM's actual scope, cover very different domains. The author created a working definition and framework of KM, by integrating some of the models in the literature.

Although the debate on the scope of KM is still active between researchers and practitioners alike, it was possible to define a global KM community, which is composed of many sub-communities.

The expectations from this community are very high, as KM is considered as a major (and perhaps the most important) competitive asset in the modern economy and it is widely agreed that this asset is far from being well exploited. However, there is a considerable gap between the expectations from KM and the actual performance and benefits of KM, as perceived by most stakeholders.

The author tried to explain this gap by describing the difficulties and problems experienced by the KM community, and trying to show how the KM related academic and business literature explain them.

To better illustrate and triangulate the findings from the literature, the author confronted them with his experience in two cases. He found that even in a single real-world case, many of the difficulties described in the literature are present (details provided in Chapters 10 and 11).

Although the KM community is young, there is an active exploration of future trends. Some are already talking about "Knowledge Management Generations". The author grouped the trends in the literature into six groups, which can be mapped against some of the problems of the community.

Narrowing the gap between expectations and reality is the challenge with which the KM community is faced. In the next chapters the author will investigate how stronger relationships between QM and KM communities might aid this objective.



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## 5 Interactions between QM and KM

### 5.1 Aims

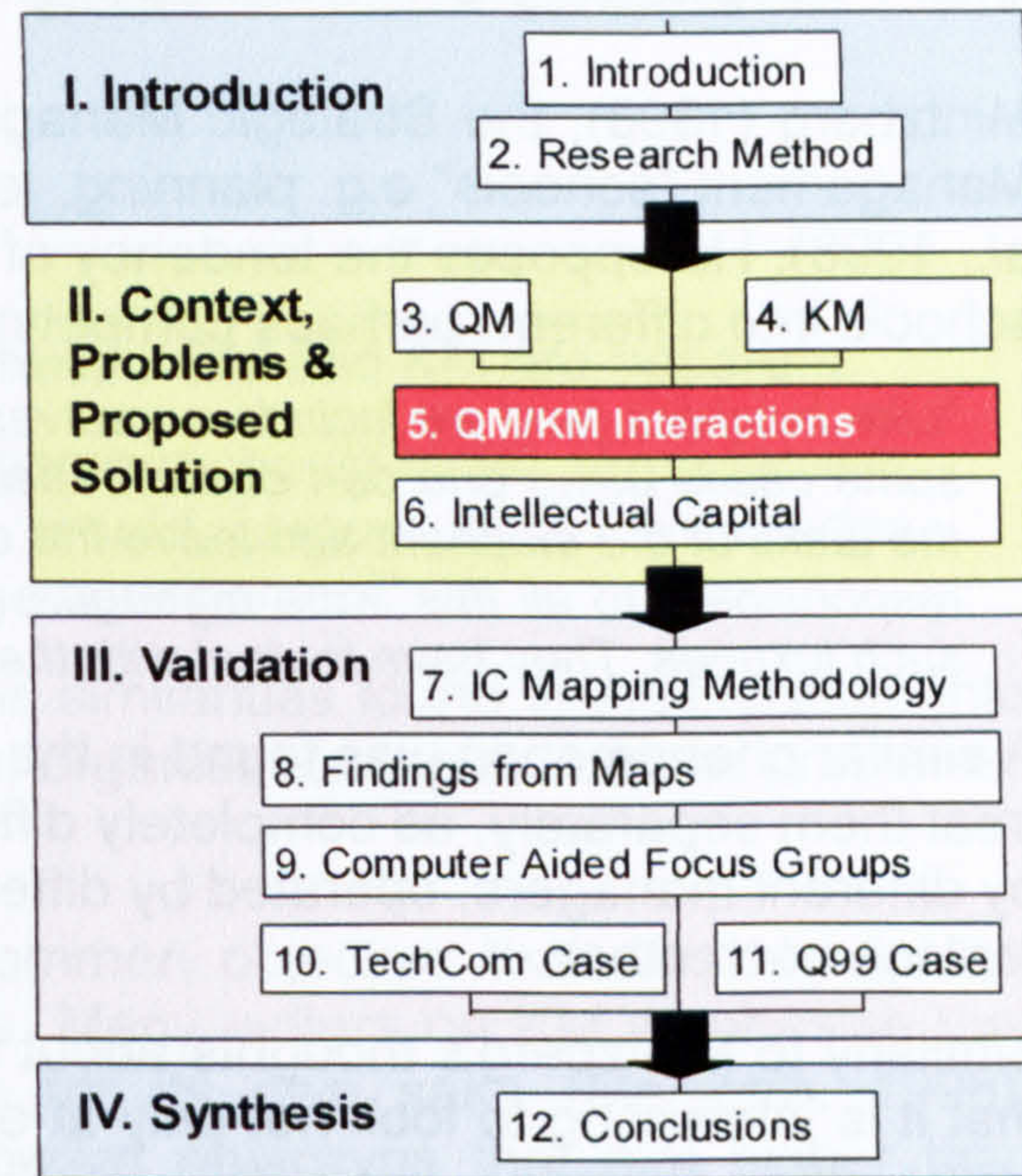
After exploring the roots, concepts, tools and shortcomings of each of the QM and KM professional communities, a more holistic approach is taken to look at interactions between the two.

This chapter relates directly to the second research question:

**Q2: What are the potential interactions between QM and KM professional communities?**

At the end of the chapter the reader will understand:

- **Why** this question is interesting?
- **How** this question was explored?
- **What** the **potential** interactions between the two professional communities are?
- **Why** these interaction patterns make sense?
- **Which** interaction patterns are **actually** practised in the QM/KM case?



*The twelve interactions patterns*



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## 5.2 Toward seeing the whole beast

### 5.2.1 A lesson from Mintzberg

Mintzberg (1998), the Strategic Management scholar, explored 10 leading Strategic Management “schools” e.g. planning, learning and positioning schools (Mintzberg *et. al.*, 1998). He opposes the tendency of academic writers and consultants to split the schools into different, perhaps competing processes.

*“Like butchers (and we include ourselves) they chop up reality for their convenience, in some cases using one part of the beast while ignoring the rest, just as poachers grab the tusks of the elephant and leave the carcass to rot. But those who have the ultimate responsibility to all this – the managers of our organisations, can allow themselves no such luxuries. They have to deal with the entire beast of the strategy formation”*

A similar phenomenon was found in the case of QM and KM. There is a tendency to treat them separately, as completely different processes. In most cases they are run by different managers, operated by different departments, and compete or even replace each other.

Similarly to Mintzberg’s thoughts about the ten Strategy Schools, the author believes that it is interesting to look not only at each discipline separately, or through the lens of the other discipline, but to look at similarities and interactions, in an effort to “see the whole beast” and to identify possible areas of beneficial co-operation.

### 5.2.2 Why collaboration?

As a result of the growing numbers of management approaches available to organisations, there are a growing number of voices that call for more collaboration. They use different terms such as ‘convergence’, ‘integration’ and ‘synthesis’ when they talk about this idea.

Baum (1996) explored the interdependence between communities. The author believes that one of his general conclusions is particularly relevant to the specific case of the interactions between the mature QM community and the evolving KM community:

*“When an evolving population interacts with other populations, the success and survival of its members depends on the nature and strengths of its ecological interactions with organisations in other populations. Consequently, it is often difficult to understand the behaviour of organisations in single populations in isolation because the fates of populations are commonly linked” (Baum, 1996).*

Intuitively, there is an apparent case for co-operation and constructive interactions between two professional communities, who operate in the same environment (e.g. same organisation), toward the same overall objective. As has been already mentioned in the introductory chapter, the author worked on this premise for several years, and tried to “make it happen” in the case of QM and KM, at a company level and at a national one. This thesis aims to explore this intuitive premise. In this chapter the interactions between QM and KM are explored with specific emphasis on collaboration patterns. The author proposes looking at that the **Similarities** and **Differences** between the two communities, as a possible explanation for the case for QM and KM interactions. Chapters 3 and 4 (QM and KM respectively) uncovered many similarities and differences. These stimulated several questions:

1. Could QM and KM work together toward their common strategic objective, using their similarities such as “common language”?



2. Could they learn from each other, so as to enhance the capabilities of both to achieve their specific objectives?
3. Could they support each other to overcome the organisational difficulties they face?

#### 5.2.2.1 Similarities

Clarke (2000) proposed that the similarities between QM and KM are apparent.

*"Certainly the advent of knowledge management should strike some familiar chords with quality professionals...I would argue that knowledge management is a close cousin of quality management".*

In the following section the author classifies the similarities found in the literature into four categories: similar objectives, focus areas, organisational position and problems.

**Similar Objectives:** QM and KM have a common objective that was highlighted above but each also has some specific goals. Many writers on KM emphasise that the objective is not to manage knowledge for its own sake (Malhotra, 1998). Similarly, in the case of QM, many point toward objectives that aim higher than merely improving the quality of a product, service or process (Dalrymple *et. al.*, 1999). A look at these definitions when placed next to each other helps to identify the common objective:

***QM and KM aim to enhance the business excellence and competitiveness of the organisation.***

**Similar Focus Areas:** QM and KM have several focus areas in common. There are many simplified models that describe the core elements of these concepts. For example, in the case of KM:

- ❑ Brompton (2000) lists *"the four dimensions of KM: People, Processes, Organisation, and Culture"*.
- ❑ Dayan (2002) proposes: "Culture, People, and Technology"
- ❑ Wuij (2001) suggests four perspectives: "People, Information Technology, Enterprise Effectiveness, and Intellectual Effectiveness".
- ❑ Andriessen and Tissen (2000) propose: "Primary and management processes, Technology and explicit knowledge, Technology and Explicit knowledge".
- ❑ O'Dell and Grayson (1998), when they describe the components of a successful Best Practices system, put forward the following factors: "Culture", "Processes" (process improvement, methodology, and measurement), "Supporting Technology", and the "Personal and Organisational willingness to learn".

In the case of QM, these elements are also mentioned as part of its core focus areas. For example, Baldrige focus areas include: *"Human focus"* (similar to "People focus"), *Information and Analysis*, *Business Results*, *"Process management"*, *"Leadership"* (which includes aspects of culture) (Baldrige, 1998).

From the literature survey conducted in this research of QM and KM models, a list of six focus areas which are common to both communities, has been developed: Process, People, Culture, Organisation, Technology, Data/ Information/ Knowledge.



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The following section provides a more detailed look into the common focus areas of QM and KM:

□ **Productivity focus:** The elimination of waste and productivity improvement is central to the philosophy of QM (Deming, 1986). The name of one of the most influential quality institutions in America, the A C (American Quality and Productivity Center) clearly demonstrates the linkage. Another example for this focus is the model of Cost of Poor Quality shows how elimination of internal and external waste (cost of failure, e.g. rework and scrap). KM is also concerned with *"productivity of the knowledge worker"* (Drucker, 1996). The issue of "Reuse" of existing knowledge is central to KM and is even included in some of its definitions (Hofer-Aleis, YEAR). Note: as was already highlighted in Chapter 3, some KM practitioners are already shifting their attention from reusing exiting knowledge to the challenge of generating new knowledge (Ruggles, 1998).

□ **Process Focus:** both communities focus on improving the organisational processes. Although the concept is more explicit in QM, both support the idea of the Plan Do Check Act (PDCA) cycle. Antoni (2000), for example, think that the main feature of QM is its "process orientation". *"It is not enough to apply continuous improvement thinking to the final product or service, but also to the process of producing it, or in other words to shift the focus of attention from the results towards the causes of actions leading to the results"*.

□ **Culture Focus:** both put specific emphasis on the "culture" issue as the number one blocker or enabler of organisational excellence, with the aim of impacting it. The "role of leadership", the importance of "shared values" and a host of other cultural issues are widely discussed in the professional literature of both communities.

□ **Technology Focus:** both invest in technology, sometimes extensively. However, both recognise that technology is only an enabler.

□ **People Focus:** Both disciplines put a strong emphasis on the human capital of the organisation. For example, according to the American Society for Quality (ASQ) *"TQM is based on the participation of all members of an organisation in improving processes, products, services and the culture in which they work"* (ASQ, 2000). "Empowerment" is a core concept in QM. Similarly, KM focuses on the "Knowledge Worker" (Drucker, 1999) and the Human Capital (Roos, 1998).

□ **Organisational Focus:** Both QM and KM address many organisational issues. QM has developed multiple organisational models to promote quality, ranging from complete centralisation to complete decentralisation of the quality function. QM is also concerned with the role of management in the quality management agenda (which is the reasons for inclusion of the "leadership" criteria in all quality awards (e.g. Baldrige 1998). The same theme repeat also in the KM case. By definition, the challenge of cross-company knowledge sharing corresponds with organisational issues. In an article titled *"Structure and Spontaneity: Knowledge and Organisation"* (Brown and Duguid, 2001) suggest that *"in certain cases, organisations can handle the development of knowledge more effectively than markets"*.

□ **Data, Information and Knowledge Focus:** KM is, by definition, concerned with the better management of knowledge and its raw materials (e.g. Wuij, 2000). However, it is interesting to note that many of the QM concepts and tools focus on the same issues. For example: QM emphasises the importance of *"management by facts"* the importance of *"Profound Knowledge"* (Deming, 1986), the criticality of good handling of records (ISO 9000), and the role of smart processing of data as a basis for improvement (as done in Statistical Process Control).

**Similar Organisational Positions:** both QM and KM are usually support functions, as opposed to line functions such as R&D and Manufacturing. The implication is that they do not create direct value; rather they help others to deliver products or services to the market and create value for the organisation (QM: (Silverman and Propst, 1996, KM: Earl, 1999).



**Sustainability Problems:** both are facing similar challenges of being sometimes considered as “passing fads” or “expensive and not-value-adding overheads”. There is growing pressure on both to show their “Return On Investment (ROI)”. Ellinor and Gerard (1998) present some core dilemmas facing organisations. One of these challenges, *Fire Fighting*, is particularly problematic to both QM and KM communities, both of whom try to convince management to invest in process improvement for the long run and not just focus on short term. Deming already referred to this problem in the 50’s, when he counted “*emphasis on short-term profits*” as one of the “*Seven deadly management diseases*” (Deming, 1986). Both are at a risk of shrinking or disappearing (QM - Cohen, 1998; Shaw, 2002 and Van der Wiele and Williams, 2000. KM - Cohen, 1998; Rigby 2001, and Moore 2001).

### 5.2.2.2 Differences

Interestingly enough, Malhotra (2002) emphasises the differences, not the similarities, as the basis for co-operation: “*Discontinuously changing environments impose upon the organisation a need for ‘creative synthesis’ resulting from a dialectical confrontation of opposing interpretations*”.

De Long and Seemann (2000) argue that implementing a KM project is a very complex process. “*Dividing such innovation tasks among specialists and trying to integrate them later is a flawed process*”. Thus, such projects should represent, from the beginning, four complementary perspectives: Leadership, Context/Practice, Information Technology and Change Management.

Many other arguments are provided in the description of the four collaboration patterns later in this chapter.

#### Side story: the art of mixing colours

In September 2002 the author met Jacob Hecht, the president of the Institute for Democratic Education, and founder of the first Democratic School in Israel. They travelled towards Jerusalem to discuss the Mitzpe Ramon future centre initiative with the Knesset’s Commissioner for Future Generations. The author described the subject of his academic research, which immediately triggered Jacob to reveal a theory, which he developed and uses as the foundation for his professional work.

*“Mixing red and red together results in...more red. Similarly, proposing that the members of the teacher’s community think together on how to renew the education system will yield nothing more than the old ineffective solutions. Or, worse - that they will perpetuate the same old problems of the system. True renewal will come only from mixing colours”.*

He gave three examples taken from his educational work:

*\*In the desert town Mitzpe Ramon, two communities struggled for years to renew (or sometimes even survive): the municipal education system, and the large artist communities. The significance progress was achieved only when these two communities, beforehand completely separated groups, were mixed in different ways.*

*\* In Hadera town, a large group of children who were dropped out of the formal education system was offered for years irrelevant solutions, which did not lead to any personal progress and growth. At the same town, a growing group of pensioners were struggling on both their economical survival and mental one, in search of meaning.... A renewal was achieved when these two communities were mixed together. For example, by joining forces to create shared small economical initiatives.*

*\*Another program offered headmasters the opportunity to mix with Lt. Colonels from the air force in a periodical group and pairs meetings to exchange ideas, learn and coach each other and grow together.*

This metaphor of mixing colours described accurately what the author is also trying to achieve, in the case of the QM and KM “colours”.



The adjective “complementary” is used in this thesis to describe the potential value of the differences between professional communities. Hypothesising (discussed in greater detail in the following chapters) that there are two reasons for the relevance of differences as a source of potential collaboration:



Strengths and weaknesses are complementary: each community can support the other using its relative advantages.

Differences can also mean different perspectives and approaches to a given problem. A multi-perspective approach is richer by definition and might lead to more effective results, as de Long and Seemann (2000) point out. When the author visited Skandia Future Centre, he took a photo of the probe "*perspective is worth 50 IQs*" which was coined by Gary Hamel from Harvard University. It illustrates the importance of a multi-perspective approach to organisational challenges.

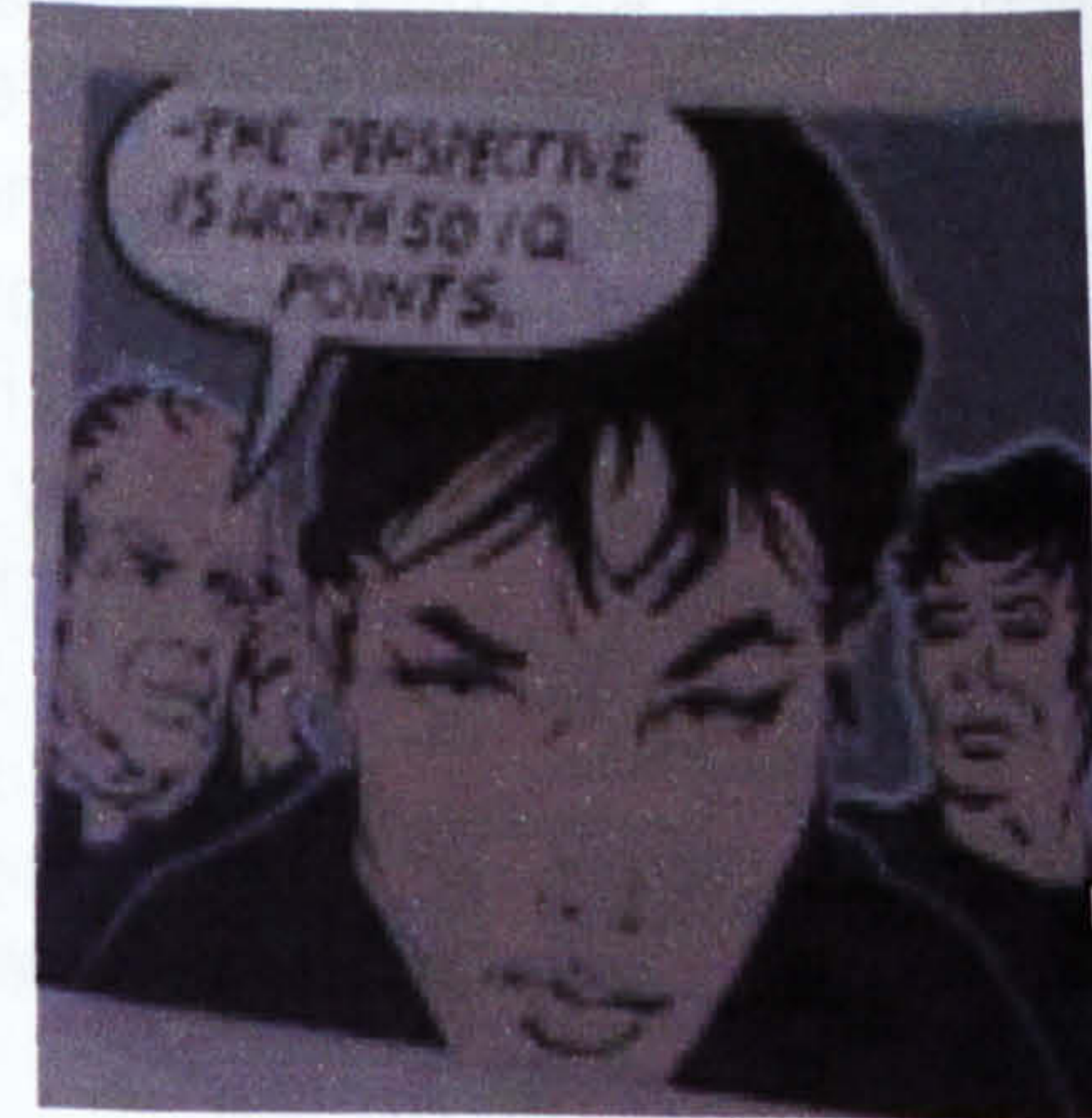


Figure 5-1: *The perspective is worth 50 IQ points*

The following list highlights some of the differences between QM and KM

- **Basic Paradigms:** QM is concerned with control: "structures", "order", "standards", "planning", "procedures", "auditing" (Greene, 1993). KM authors often talk about the importance of "spontaneity", "self-organisation" and similar paradigm (Allee, 1997). Care needs to be taken here, as well as in the next point, as there is no single approach to KM, and there are many "*Knowledge Management(s)*" (Depres and Chauvel, 1999). Some KM streams tend to emphasise the importance of systematic processes and management, while others fight this, claiming "*KM can not be managed*" (Amidon, 1996). The same is true for QM. While the mainstream does promote "structure and order" there are some QM thinkers that believe that QM needs to follow the principles of complexity theory (Knights and McCabe, 2002). Thus, the differences we list here are not "clear-cut" and sometimes they are matters of nuances or of the common case.
- **The unit of analysis: Knowledge types:** it has already been stated that one of the similarities of the two communities is that both are interested in the full spectrum of data/ knowledge/ information. However, there is a difference here: QM is more concerned with codified data and information – and thus puts a lot of effort on the proper management of "records". In the Baldrige Award criteria, the management of information is considered important, and some of the ISO9000 items are also focused on this. KM is interested in the complete lifecycle of knowledge and Information – from creation to codification to socialization to internalisation (Nonaka and Takeuchi, 1998). A large portion of the KM research is focused on the creation of knowledge and on the management of **implicit** knowledge, while QM is more concerned with **explicit** knowledge.
- **Usage level:** QM has been implemented much more widely than KM. There is a QM function in most manufacturing organisations and many other types of organisations. ISO9000 or equivalent standards are widely implemented. The implementation rate of KM is much lower – (Rigby, 2001). The QM community is much larger than the KM one. As one quantitative indicator shows about 1800 professionals participate in the main annual Israeli QM conference, and only 150-200 in the equivalent KM conference.
- **Institutionalisation of the professional communities:** The QM community is much larger than the KM one. As one quantitative indicator shows about 1800 professionals participate in the main annual Israeli QM



conference, and only 150-200 in the equivalent KM conference. Moreover, QM is much more institutionalised – it has well-established associations, certification programs, standards, national awards etc. The professional institutionalisation of KM is just starting to emerge, with small-scale initiatives to establish similar mechanisms, e.g. the MAKE - Most Admired Knowledge Management Enterprise – award (Chase 2001), or small scale certification programs initiated by consulting companies.

### 5.2.3 Co-operation and the problems of QM and KM

In the previous chapters the author has discussed in detail the problems of the QM and KM professional communities.

It is interesting to note that some of these problems might be potentially addressed by co-operation between QM and KM. Such potential contribution offers additional insights into the question “why collaboration”?

#### 5.2.3.1 Addressing QM problems

In the following figure, the framework of QM problems presented in Chapter 3 is shown again. Red font highlight the problems that might be potentially addressed through co-operation with KM. These problems belong to all four-problem categories of this framework.

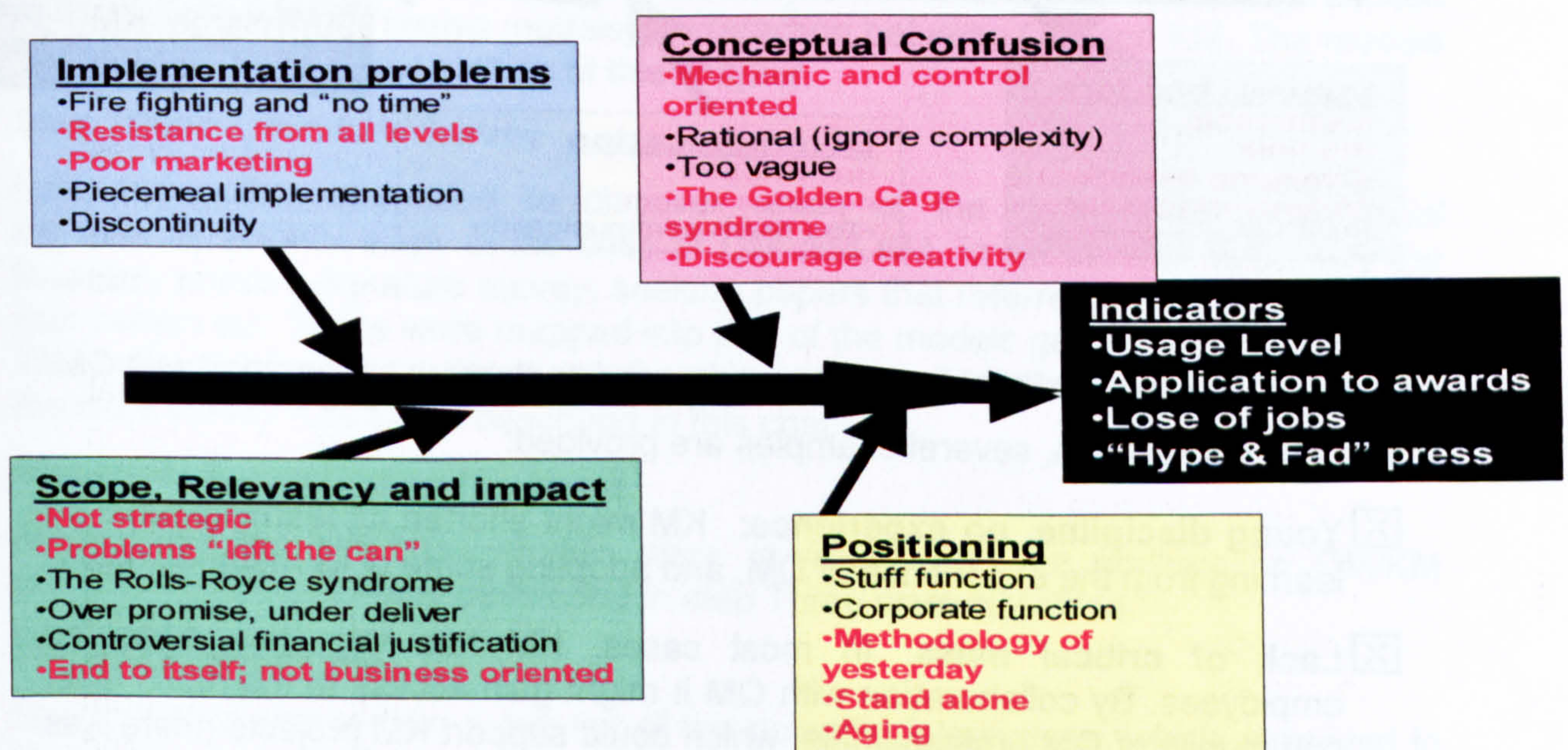


Figure 5-2: QM problems that might be addressed through co-operation with KM

Few examples are explained:

- ☒ **“Not strategic”**: The issue of *better exploiting the organisational knowledge* is widely accepted as one of the biggest strategic challenges of modern organisations (Drucker, 1995 1996?). Thus, by adding this issue to the scope and domain of QM, access (or insight??) to this strategic issue can be gained.
- ☒ **“Problems left the can”**: dealing with KM can lead QM to address the most relevant challenges of the organisation, and help it decrease its predominant focus on manufacturing issues (James, 1997).



✗ **“Discouraging creativity”**: many practitioners consider QM as too mechanistic and risky to the creativity of employees (Barth, 2000 and Fienberg, 1998). The author believes that from KM QM can learn how innovation works, and how to contribute to it.

✗ **“Resistance from all level”**: it is assumed (based on the author’s experience), that many line managers and employees in functions such as R&D are more open to work on “Knowledge” projects than “quality initiatives”.

### 5.2.3.2 Addressing KM problems

In the following figure, the framework of KM problems, presented in Chapter 3, is shown again. The problems that might be addressed by co-operation with QM are highlighted by the red font.

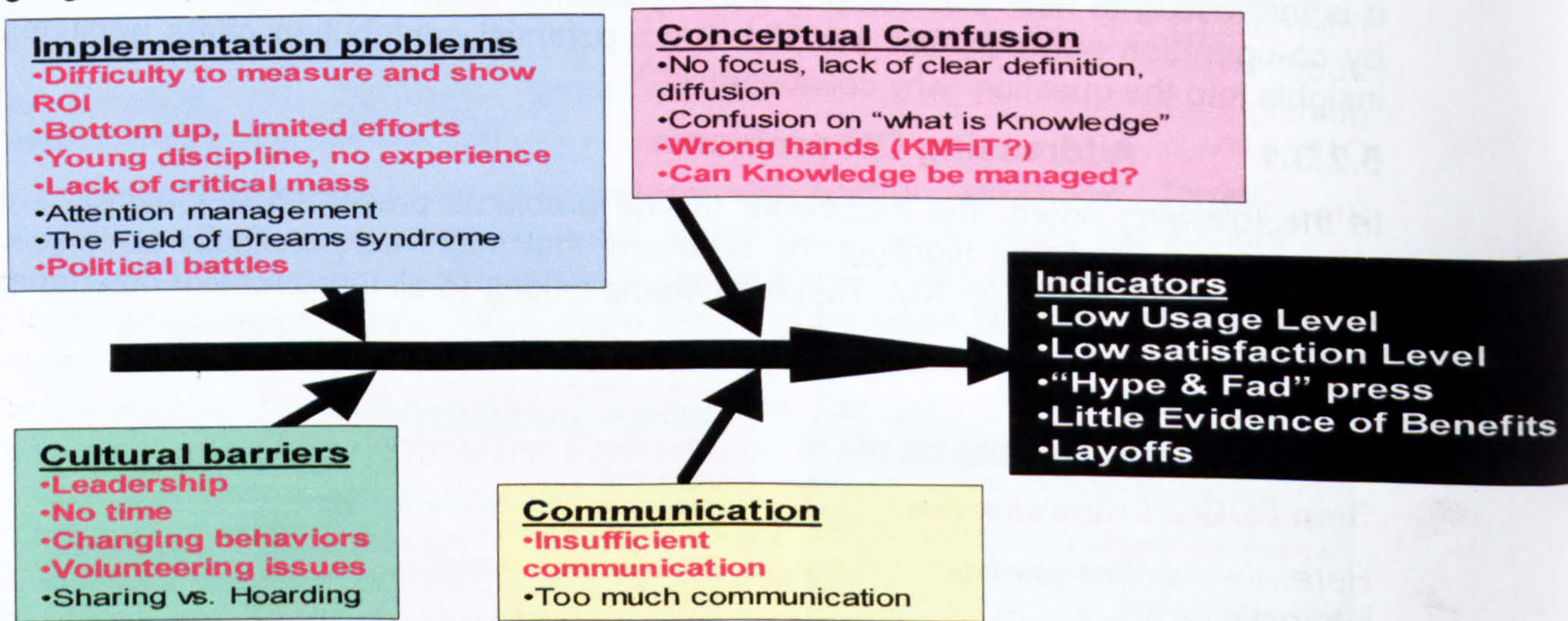


Figure 5-3: KM problems that might be addressed by through cooperation with QM

In the following section, several examples are provided:

✗ **Young discipline, no experience**: KM might shorten its learning curve by learning from the experience of QM, and adopting some of its methodologies.

✗ **Lack of critical mass**: In most cases, KM has very few dedicated employees. By collaboration with QM it might gain access to the much larger community of QM professionals, which could support KM projects (there was an attempt to apply this idea in TechCom which is described in the validation part of this thesis).

✗ **Limited bottom up efforts**: KM might join some of the cross-organisational improvement programs initiated by QM e.g. joining the “lean manufacturing program” or “six-sigma” programs (this was the case in HiAero).

✗ **Can KM be managed?** This is one of the conceptual confusions around KM. In some organisations (but not in all, as is apparent from some of the QM problems described earlier), QM found how to balance between control, standardisation, and self responsibility and freedom of the employees (Greene, 1993). The author believes that KM may benefit from the insights and approaches of some of the more advanced QM researchers and practitioners, who “have been there”.



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## 5.3 The process of exploring QM/KM interactions

A seven-step process was taken to explore the interactions between the QM and KM communities. For simplicity, the process is described as a linear one. In reality, it was iterative.

### **Step ONE: Intuitive real-world experimenting**

For several years, the author was a member of both the KM and the QM communities in a large industrial organisation. This led him to experiment with and practice different interaction patterns, which intuitively were considered to add value to the organisation. This case is described in Chapter 10.

### **Step TWO: Reflection and more experimenting**

Internalising the learning from step ONE, the author came to an early hypothesis about the complementary characteristics of QM and KM. This idea served as the guiding principle and common theme for the design and operation of a large national QM conference. This case is described in Chapter 11.

### **Step THREE: Modelling**

In this step, the author graphically modelled many alternative interactions between two professional communities. The exercise describes some basic mathematical descriptions of groups. The approach is analytical in nature and eventually resulted in the development of twelve models of interaction between QM and KM. The models are described in the next section of this chapter.

### **Step FOUR: Literature Survey**

Here the author attempted to discover which of the many-modelled *potential* interactions actually exist, in the case of QM and KM. In an attempt to identify the trajectory points a literature survey, seeking papers that referred to both QM and KM, was carried out. These were mapped into one of the models generated in step Three. This exercise also led to discovery of new models, and feedback to step Three. The literature survey results are described in this chapter.

### **Step Five: Re-evaluating the cases**

At this step the two case studies were re-visited, and the findings on QM/KM interactions in the scheme developed in step Three were classified.

### **Step SIX: Re-framing**

The final step was to take a sub-set of the potential interactions, which appeared to be closely connected (namely the four co-operation patterns) and re-frame them to create a more complete approach, using the Intellectual Capital concept (which is described in Chapter 6). As opposed to step Three, a synthetic approach was taken.



## 5.4 Typology for alternative patterns of QM/KM interactions

As argued in the previous section, there is a case for co-operation between QM and KM, based on their similarities and differences. However, what happens in reality? Not enough integration, according to researchers such as Dalrymple (1999), who agrees with the need for integration of distinct disciplines, but argues that such potential is hardly realised. He states *"While the nature of organisational excellence implies that there is a distinct need to interact with colleagues from other disciplines with similar interests to gain a more comprehensive picture, there is consensus that this opportunity is seldom available in a single academic institution. Similarly, many professional organisations address quality, or finance, or human resource development and management, or leadership, and so forth. These organisations are typically "silo" in nature and this silo effect leads to **insufficient integration of the many disciplines** required to make the strides demanded by the global marketplace in the quest for organisational excellence"*.

This section presents a full spectrum of interactions between two communities, from lack of interaction and complete mutual ignorance to full co-operation or even merging. Twelve theoretical patterns are presented, ranging from ignorance to full cooperation., as shown in the following figure.

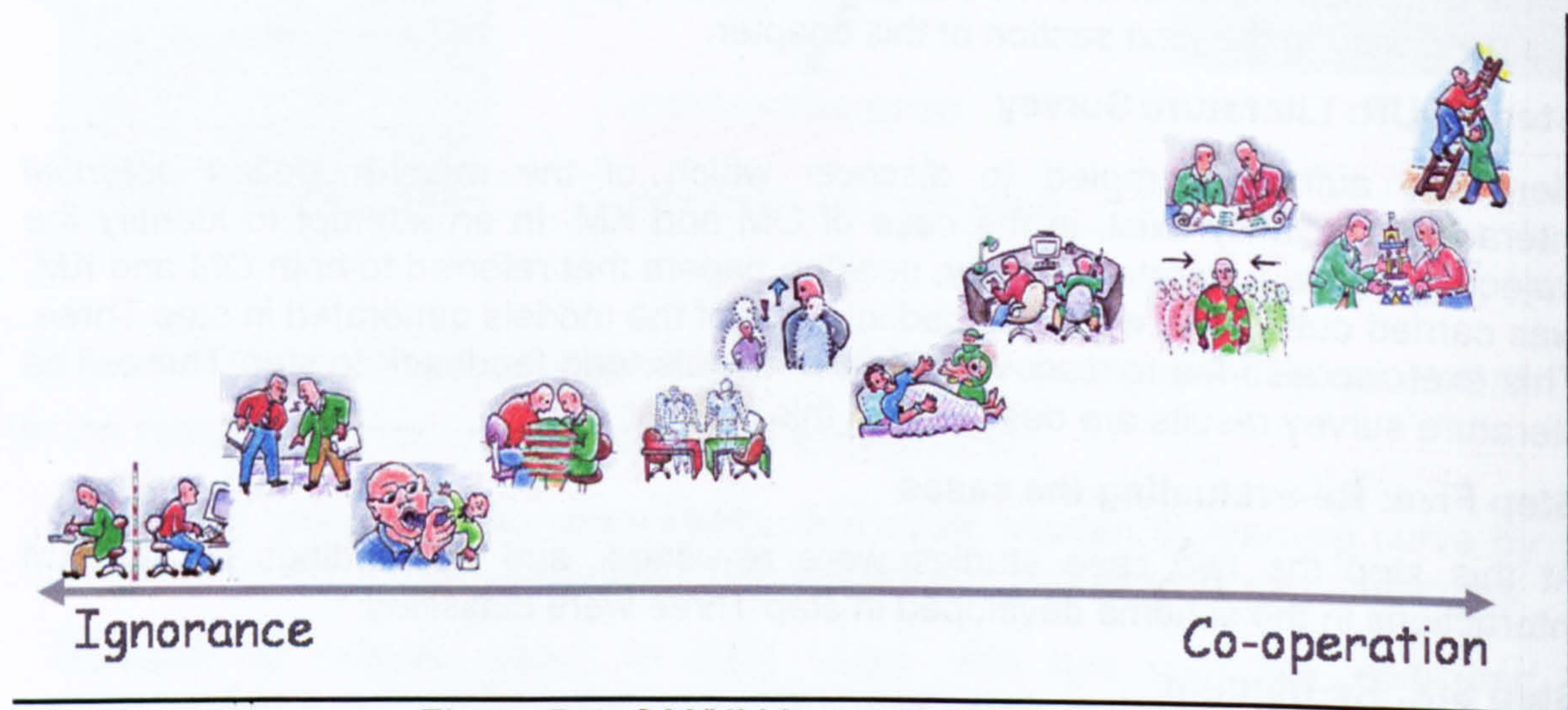


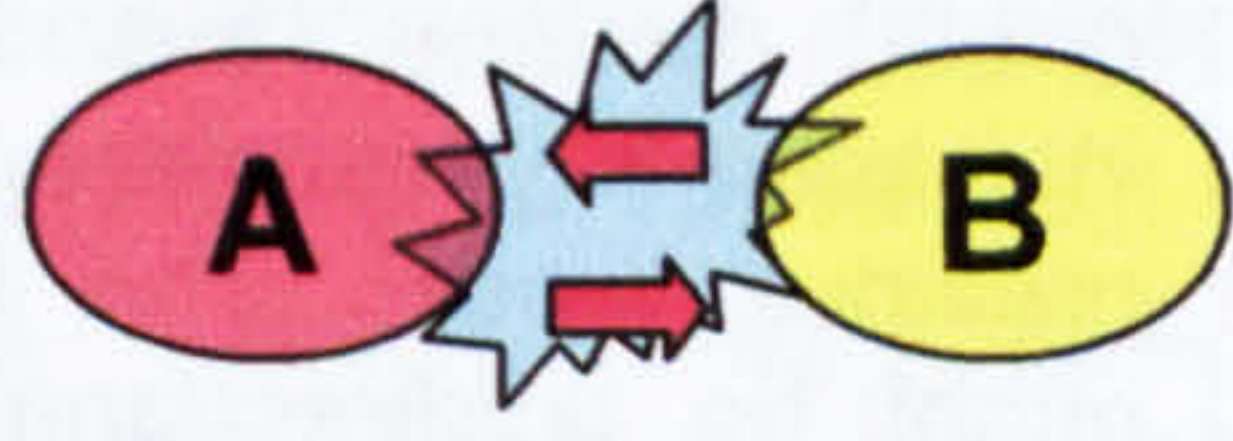

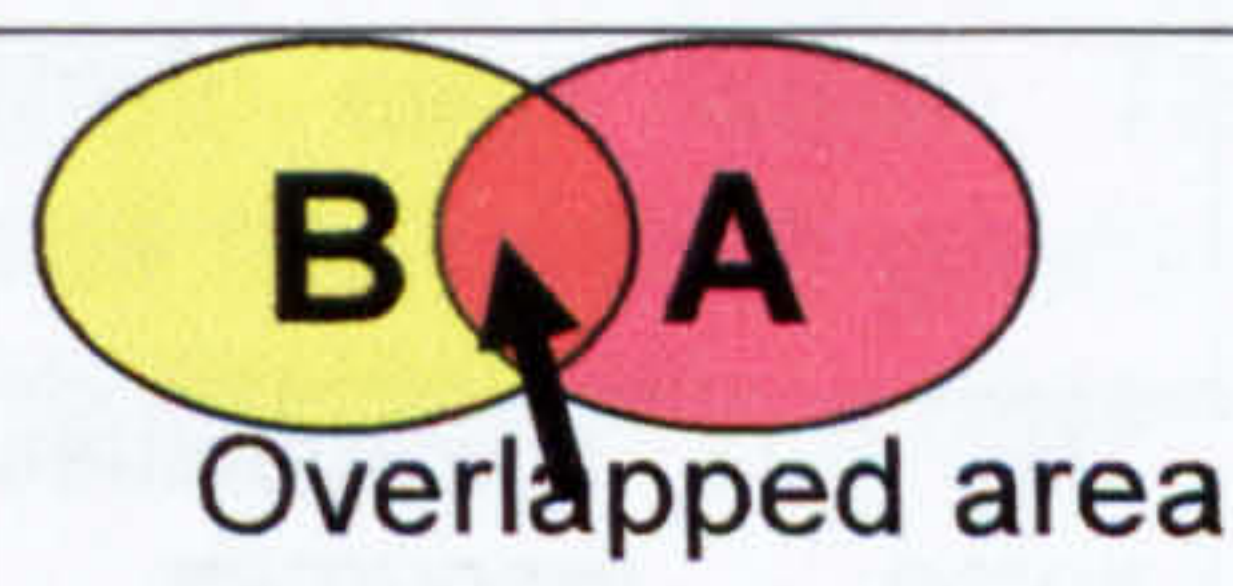

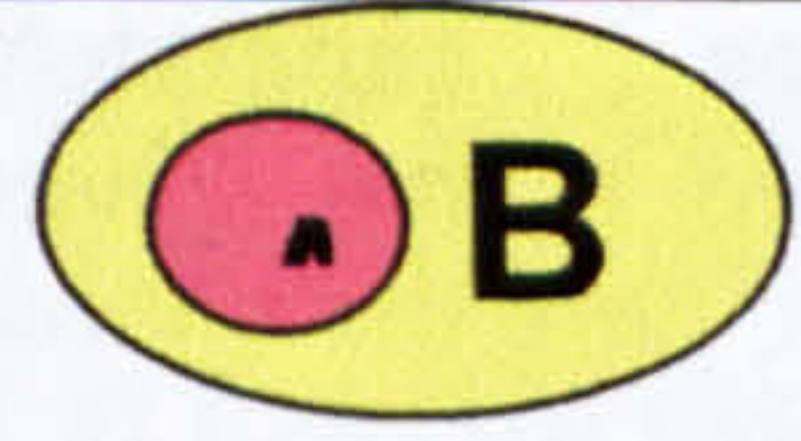

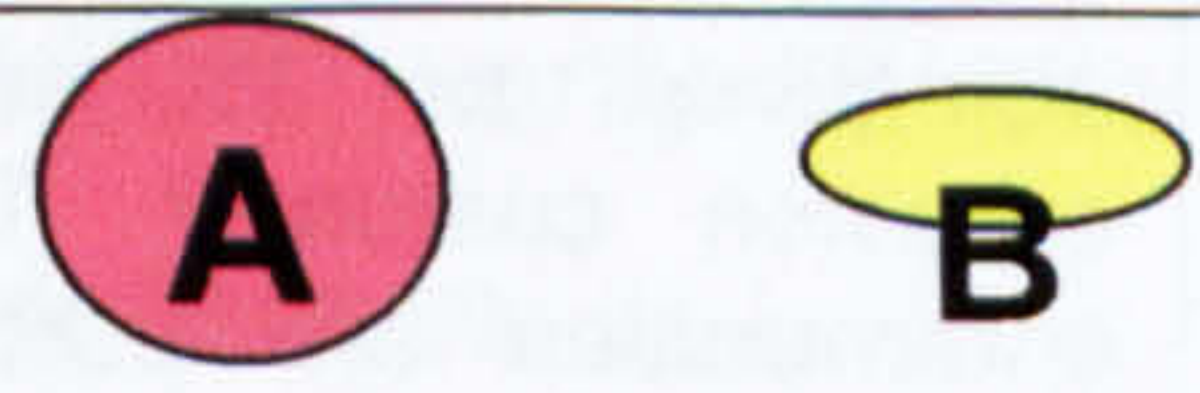

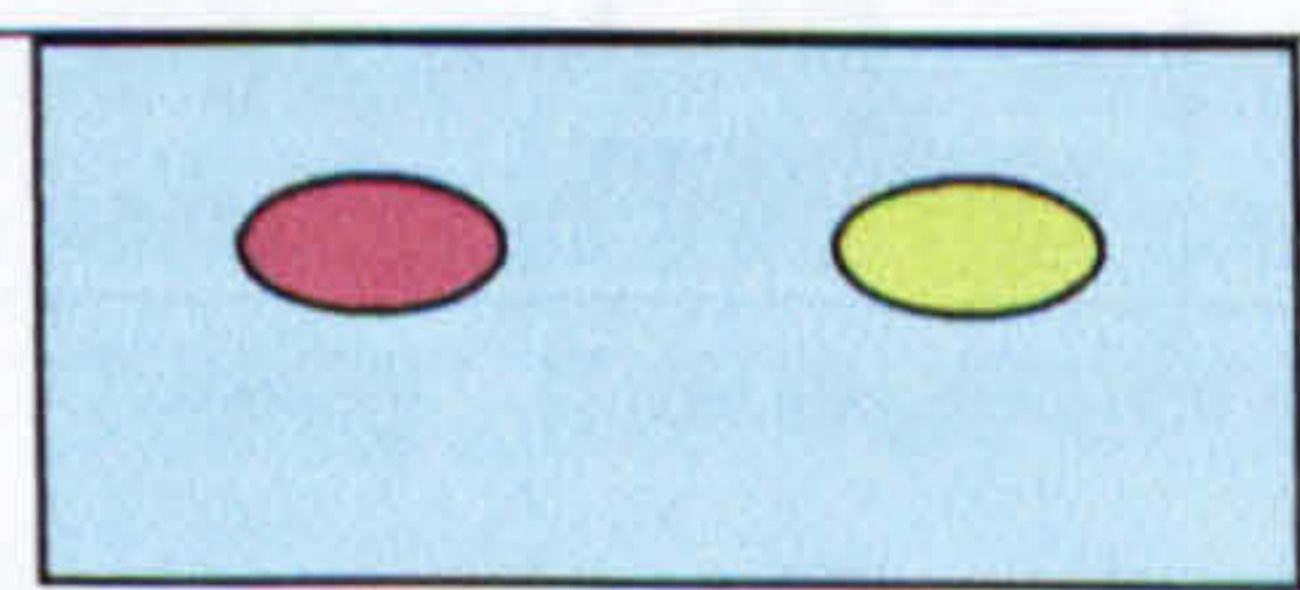
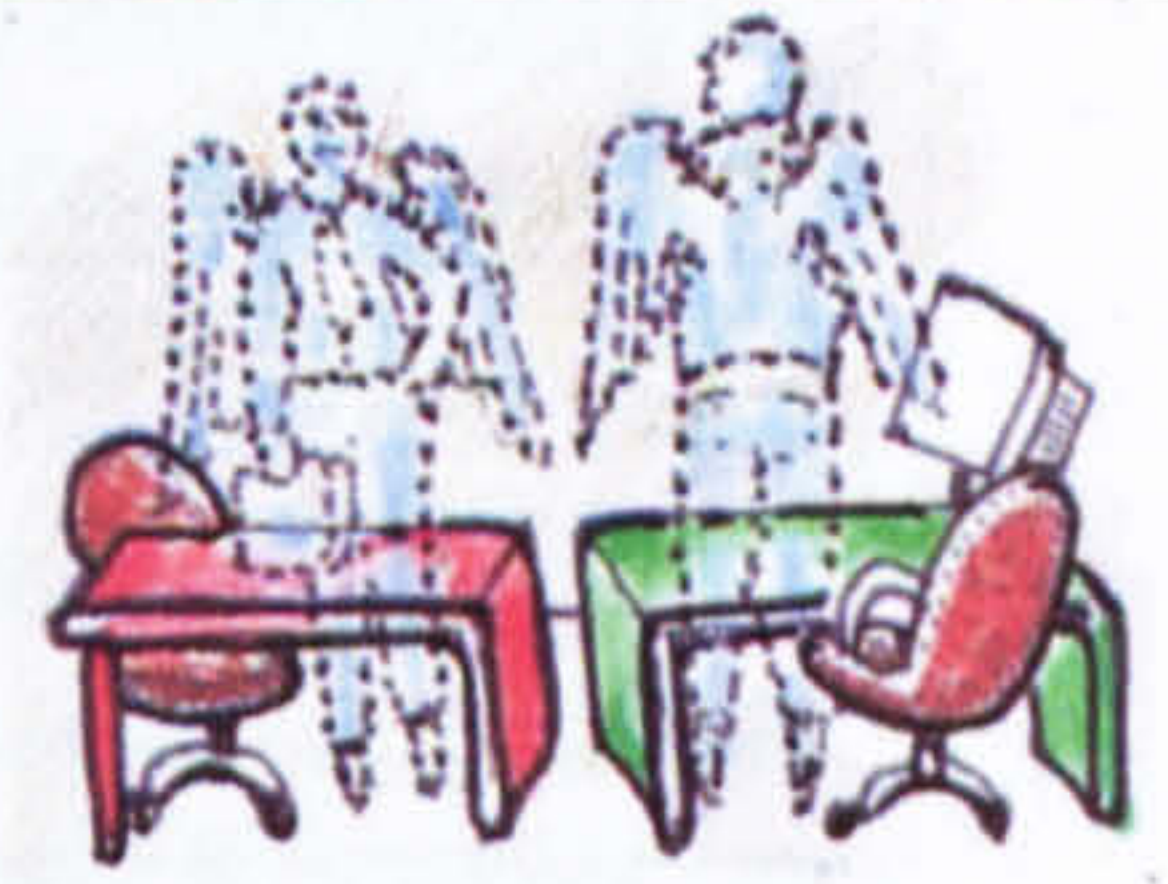
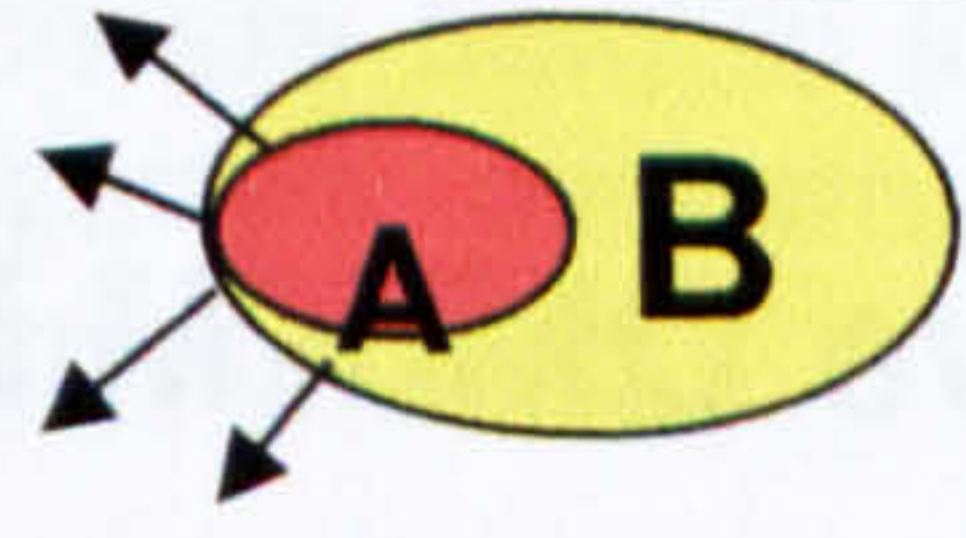

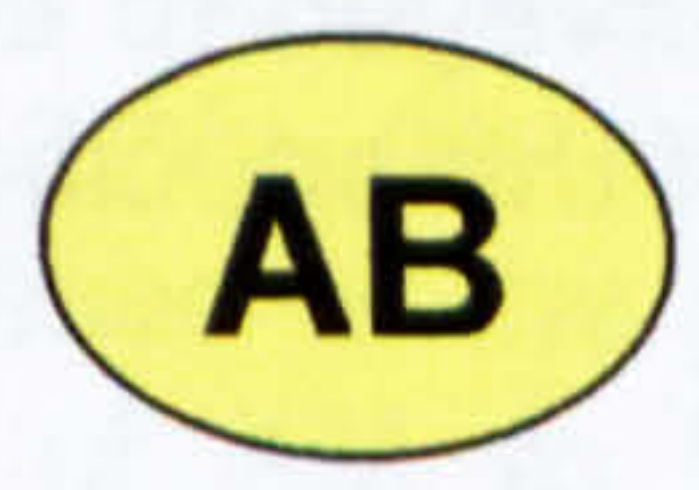
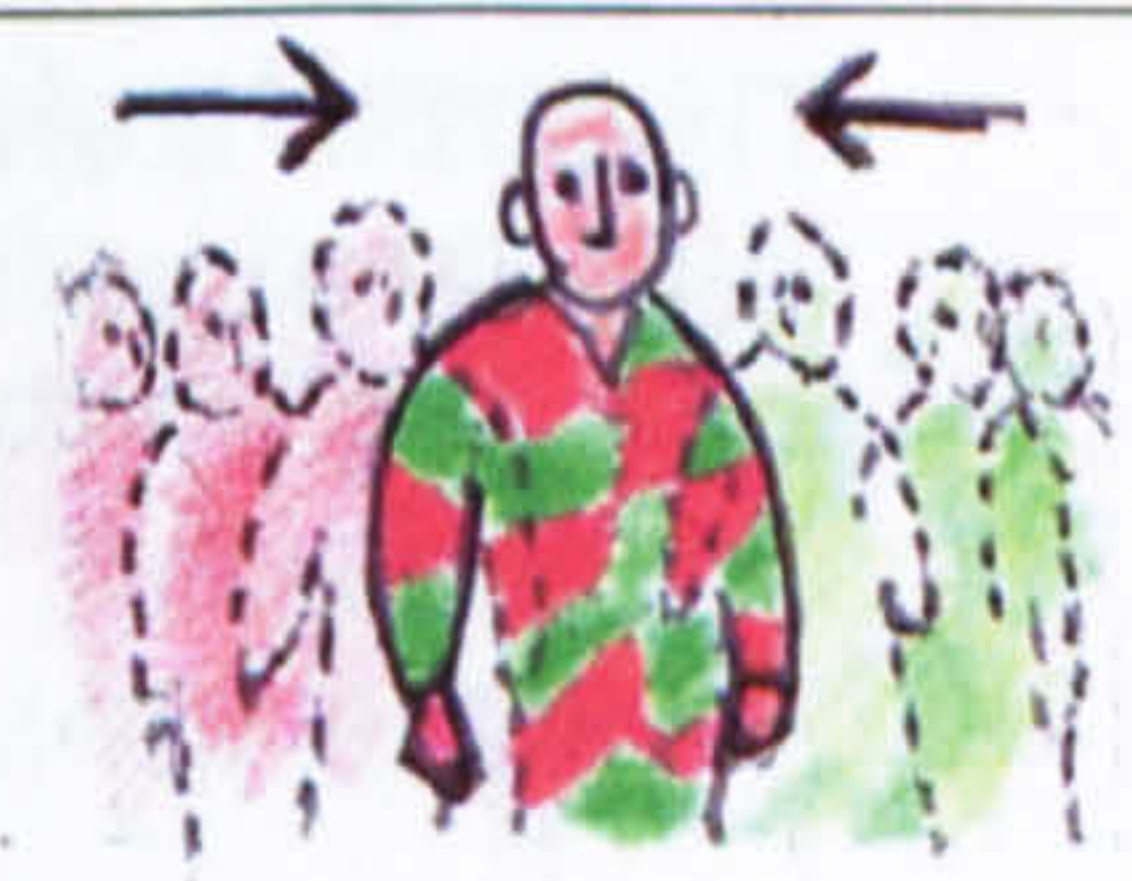


Figure 5-4: QM/KM interactions spectrum

The following table provides an overview on presents each pattern. Then, in section 5.5, each pattern is described I details,



#	Title	Description	Graphical model	
1	No interactions	Mutual or unidirectional ignorance, no interactions, no mutual impact,		
2	Confrontation	Community A attacks community B (as irrelevant, not value adding, passing fad etc.). The confrontation might be unidirectional or bi-directional		
3	Overlapping	There is some overlapping or redundancy in responsibilities, tasks or activities between the communities		
4	Take over	Community A is contained within community B		
5	Replacement	One community grows, while the other shrinks.		
6	Fading away	The two communities dissolve or significantly shrink, and their responsibilities are now embedded in the line employee's day-to-day tasks.		
7	Emergence	Community B emerges from community A		
8	Convergence	The two communities are merged into one.		



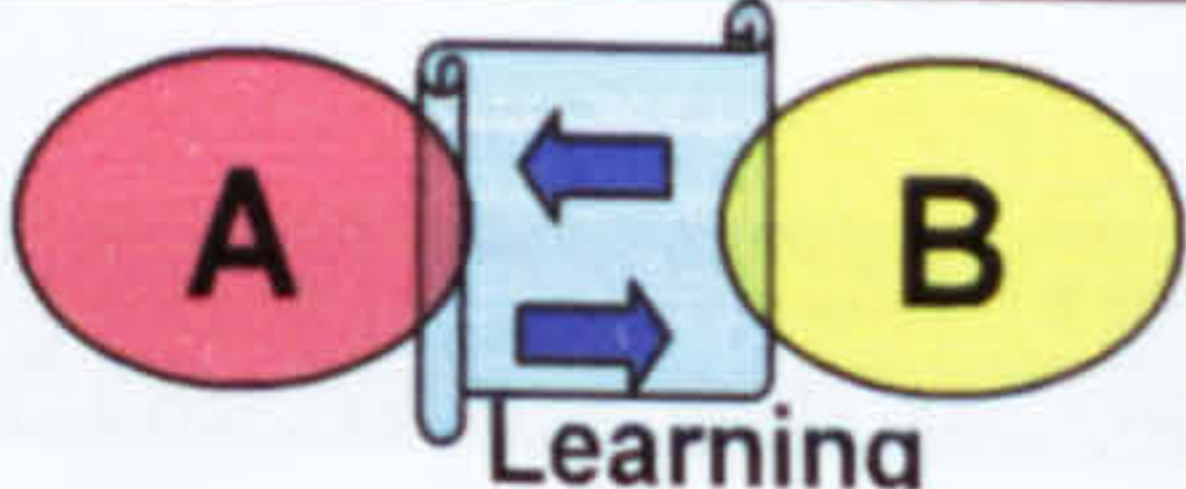

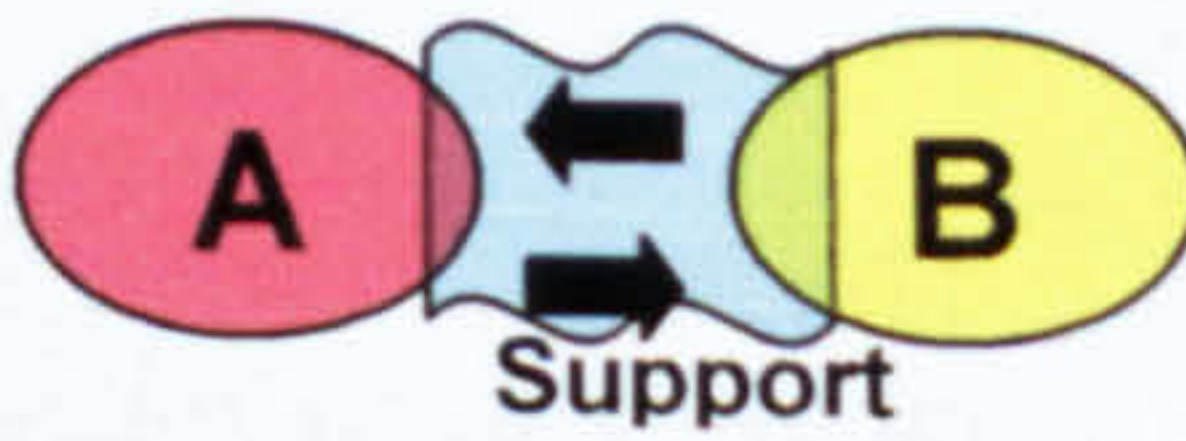

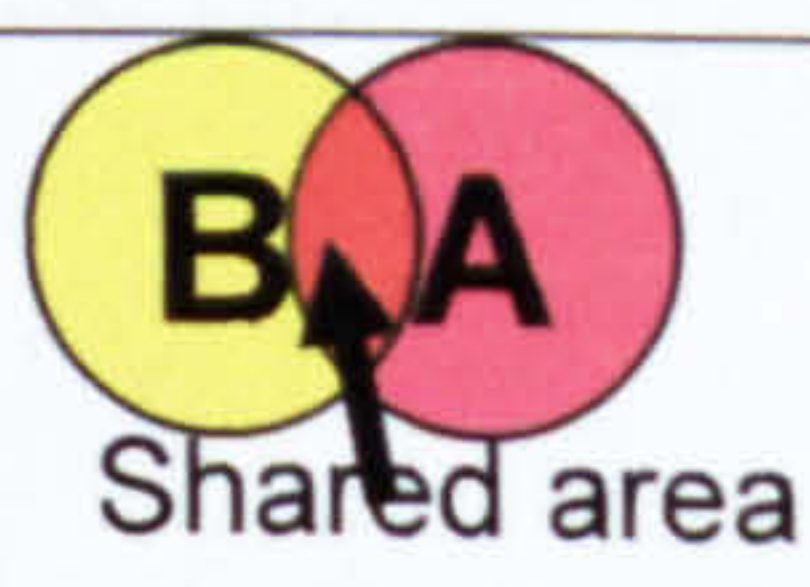

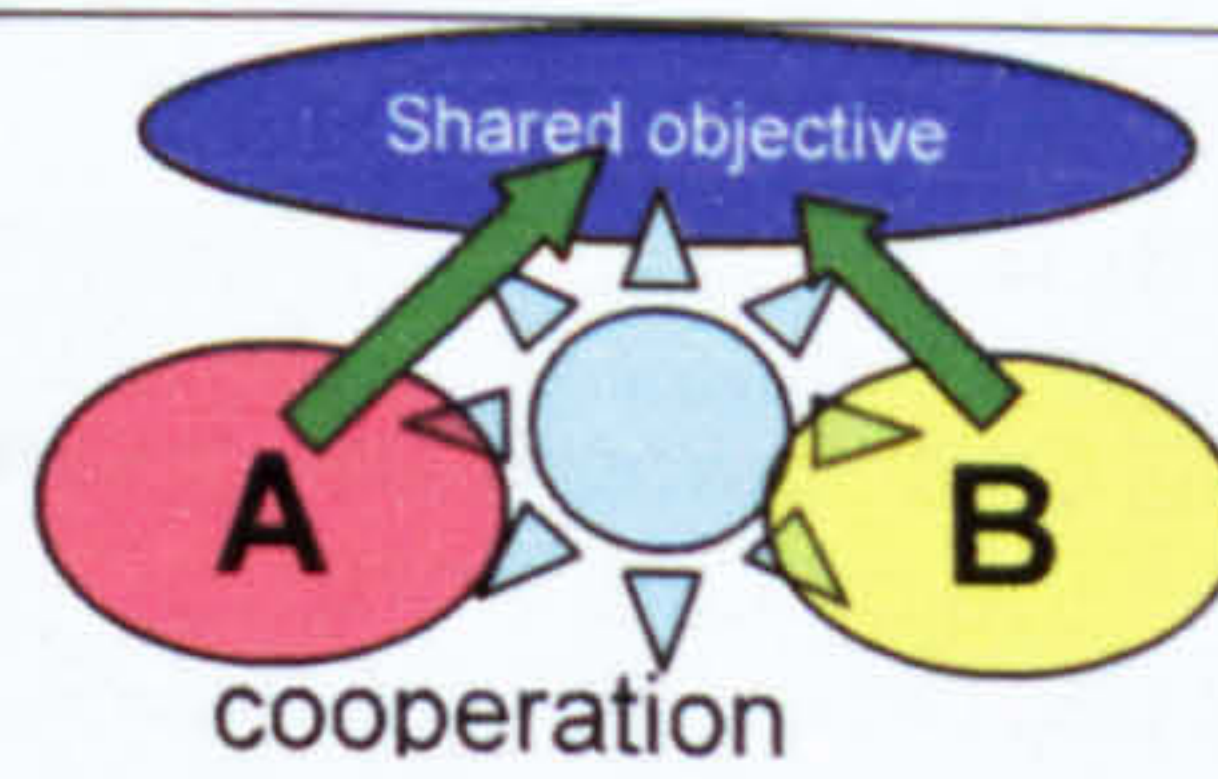

9	Cooperation I: Learning	Community A learns from community B and adopt concepts, lessons learned, methods and tools. The learning might be unidirectional or bi-directional		
10	Cooperation II: Support	Community A supports community B in achieving its goals (beyond the learning interactions described in the previous model. The learning might be unidirectional or bi-directional		
11	Cooperation III: Sharing	The two communities share some resources and/or operations. They continue to manage other resources and activities separately. As opposed to the "Overlapping" pattern, here the shared area is planned.		
12	Cooperation IV: working together toward a common objective (holistic approach).	The two communities cooperate in effort to progress shared organisational objectives or to satisfy a common customer. The two communities are part of the management "toolkit" of the organisation. There is a need to balance "Chaos" and "Order", and QM and KM are on the two sides of this equilibrium.		


Table 5-1: The alternative interactions between communities

## 5.5 Alternative QM/KM interactions in reality

First, an argument for each relationship pattern was articulated for the specific case of QM and KM, based on what was learnt about each community (Chapters 3 & 4). Then, the literature was surveyed to explore which of the above relationship patterns actually exist in the case of the specific communities of QM and KM.



## 5.5.1 Pattern: Ignorance

Pattern #	Title	Description	Graphical model
1	No interactions	Mutual or unidirectional ignorance, no interactions.	



There is a tendency for each individual discipline included in the larger Management Strategies and Business Excellence arena to lock itself into separate “**silos**” (Dalrymple, 1999). Although many of these disciplines preach to their ‘customers’ about the importance of “knowledge sharing”, “holistic perspectives”, “avoiding re-inventing the wheel”, “networking and interdisciplinary interaction”, they fail to implement what they advocate in their own work. There are several explanations for this: conflicts of interpretations of the overall goals of the community (Loverde, 2001); lack of respect for the other’s disciplines, values and capabilities; lack of curiosity; scarce attention resources.

### KM ignores QM:

Although there appears to be a strong case for active co-operation between QM and KM (as demonstrated in some of the interaction patterns presented in this section), it is surprising to find that QM is hardly mentioned in the KM literature. For example:

Knowledge management review (1998-2002): only 6 articles referred to QM (or the related terms Quality Assurance, Total Quality Management)

Knowledge Management Magazine (2000-2002): only 18 references

KnowledgeBoard (2000-2002): Only 10 references.

Several writers attribute the failure of KM initiatives to lack of proper control over the quality of the managed content. For example, a main reason for the failure of the early efforts of IBM Global Services to share their intellectual capital was attributed to the fact that “*there was no process to monitor the quality of the written contributions*” (Barth, 2000). It is interesting to note that such failures in internal processes occur in organisations that already have extensive quality management systems and experience to manage their products, like IBM.

Davenport and Kalhar (1998) discuss the possible link between KM and Customer Support (which is related in most organisations to QM). They show that Knowledge Managers often start corporate initiatives, which are hard to justify. However, they ignore the opportunity of improving the company’s performance by helping the organisation to reduce the growing cost of customer support.

### QM ignores KM:

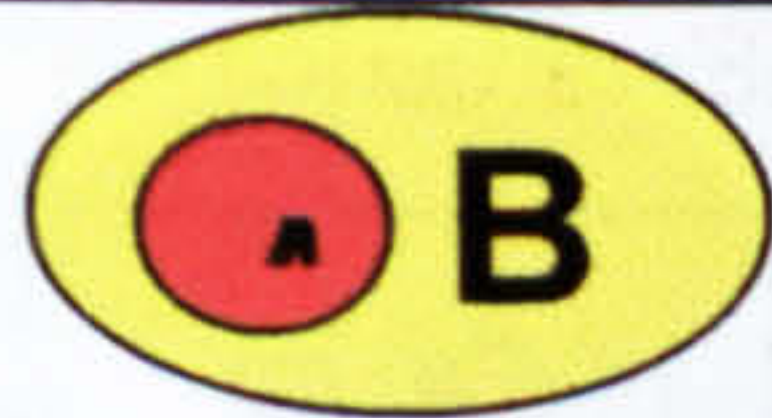
Here, the level of ignorance is generally lower than the one demonstrated by the KM community toward QM, and is dependent on the specific community. However, Davenport and Kalhar (1998) show how not only do the KM people ignore the opportunity to support a QM practice (as discussed in the previous section) but also the QM people are ignoring the capabilities of KM to help them. “*Interestingly, customer support managers have been generally unaware that they were explicitly engaged in KM*”.

For example, the American QM community shows some interest in KM.

Quality Progress, which is the main professional magazine of the American Quality community – 1994-2003: 14 hits.



### 5.5.2 Pattern: Take over

Pattern #	Title	Description	Graphical model
3	Take over	Community A is contained within community B	



When two entities are demonstrating some similarities, and are competing for the same scarce resources (limited amount of attention that both management and line employees can put into performance improvement) it is only a matter of time before take over efforts will take place and the stronger community will dominate. De Long and Seemann (2000)

describe these sources of conflicts around KM. One of the sources for such conflicts is the struggle for control over specific resources. Another source is the "*Conflicts over control of the KM franchise*". De Long and Seemann (2000) argue that disciplines, which are related to "change management", are more likely to overtake KM. Although QM is not mentioned in the paper explicitly, many members of the community are included in the category of "change agents" (or at least view themselves as such).

In an article titled "Knowledge Manager: a New Role" (Pasher, 1998) the author predicted that as the KM discipline emerges in Israel, there will be competition for its ownership between QM, Human Resource (HR), Information Technology (IT), Finance and R&D groups.

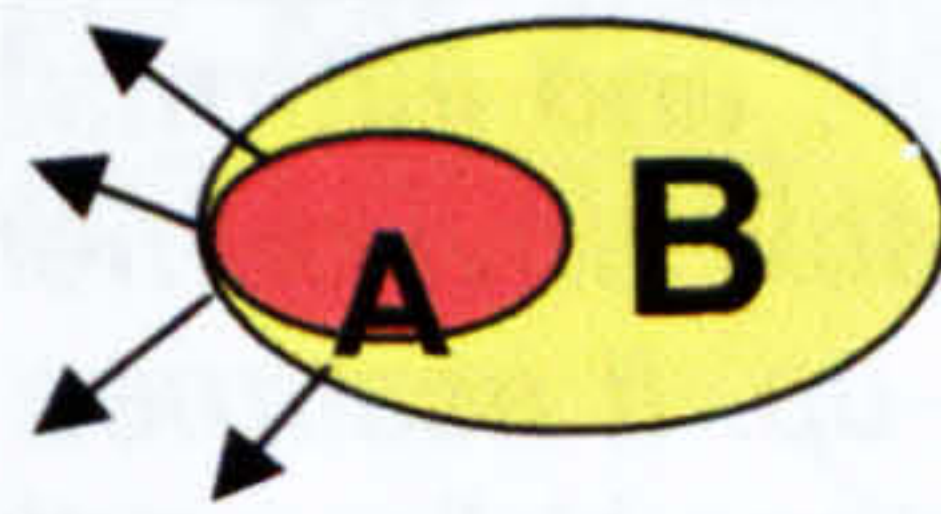
The case of TechCom (Chapter 10) demonstrates such take over efforts, where QM took over the role of leadership for KM, 3 years after the initiation of this community.

As a parallel, there are many complaints from KM professionals that another professional community, the IT one, is trying to take over KM. For example, Owens (1999) claims that KM is "misused" by the IT people.

Although the "take over" pattern was discussed so far as a non-cooperative one, it can also take a more positive shape in which one professional discipline can act as an "umbrella" to other disciplines and professional communities. For example, in their discussions of the future research direction of KM, Nonaka and Teece (2001) suggest that "*properly understood, the knowledge management umbrella could be a convenient rubric for integrating important work in accounting, economics entrepreneurship, organisational Behaviour, philosophy, marketing, sociology and strategy*". They claim that each of these fields can contribute important insights into this integrated KM discipline, while standing alone none provide an integrating framework or "*new paradigm*". Although Nonaka and Teece (2001) did not mention QM explicitly, it could fit into the long list they provided. Similarly, although they discussed the research community and focus on the need for trans-disciplinary research, the approach can be applied to the business community.



5.5.3 Pattern: Emergence

Pattern #	Title	Description	Graphical model
4	Emergence	Community B emerges from community A	



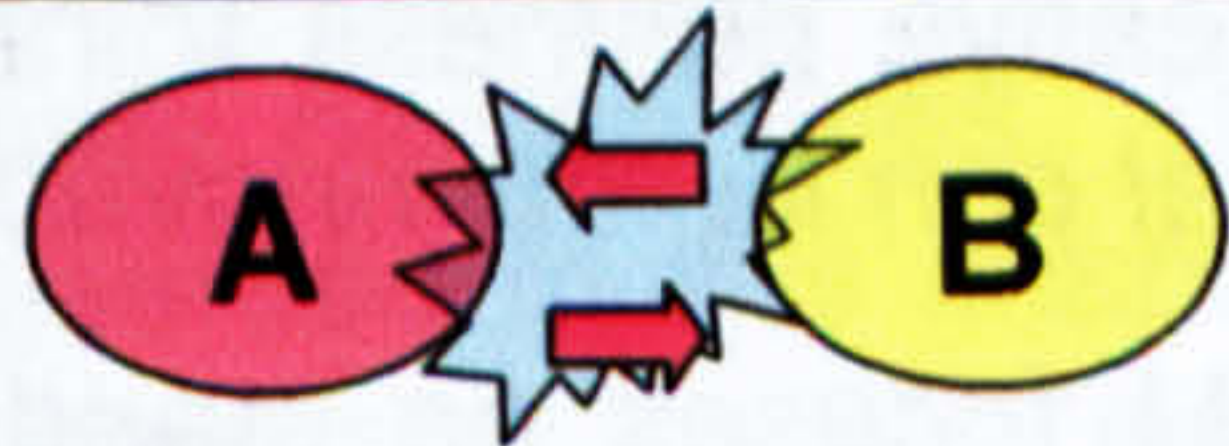
Karl Wuij (2002) explored the roots of KM. He sees KM as a step in the quest towards work improvement and organisational effectiveness, which took place throughout the 20<sup>th</sup> century. Wuij points to Taylorism and TQM as two of KM's many roots. Some business practitioners describe QM as “an early knowledge program” (Cohen, 1998). O'Dell, the president of the American Quality and Productivity Centre, analysed some of the issues at the heart of QM e.g. internal best practices, and identified them as KM issues (Cohen, 1998).

Several other researchers view QM as one of the philosophies that contributed to the creation of KM (Skyrme, 1997 and Stewart, 1997). In this light, it is interesting to report that in the KM literature survey, it was discovered that there was very little reference to the work of Edward Deming, who is considered by many as one of the founding fathers of QM. This is surprising because his work from 20 and up to 40 years ago articulated many knowledge management principles, titled by him as “Theory of Knowledge” (Deming, 1986).

Clarke (2000) suggested that “in many ways the quality profession ‘have been there and done it’ in respect to many of the many challenges the knowledge management is facing”. He adds, “In my experience knowledge management usually emerges in two areas of the company – information technology (IT) and quality”

As will be shown in the TechCom case, the emergence of KM from QM does not only occur at a conceptual level but also at an organisational level.

5.5.4 Pattern: Confrontation

Pattern #	Title	Description	Graphical model
5	Confrontation	Community A attacks community B (as irrelevant, not value adding, passing fad etc.). The confrontation might be unidirectional or bi-directional	

**KM confronts QM:**



Many KM researchers and practitioners confront the shortcomings of QM, based on their perception of this discipline. Usually, this is put in the context of “why TQM fails and KM will prevail”. For example:

Snowden (2000), who led the KM initiative of IBM, argues against the “control” paradigm of QM: “knowledge can only ever be volunteered. You can enforce participation in process improvement, quality management exercise and the like: it may not be the best way, but you can make it work. In contrast, a knowledge



*programme requires the active and willing participation of volunteers if it is to have any hope of succeeding".*

Seely Brown from Xerox, who was voted in 2000 as one of the 10 most admired knowledge leaders (Chase, 2001), confronts KM with Business Process Re-engineering, saying the latter does not fit today's business environment. *"They are profoundly different approaches. Re-engineering is about the structured co-ordination of people and information. It's top down, it assumes that organisations compete in a predictable environment. KM focuses more on effectiveness than on efficiency. It is bottom-up. It assumes that organisations compete in an unpredictable environment".* The author believes that although Seely Brown used the term "re-engineering" he also addresses the overall QM paradigm (Brown and Duguid, 2000).

Prusak (2000) argues that *"Trying to manage the knowledge of the enterprise is one of those relics of social engineering and central planning that have been discredited everywhere in Western civilization - except in the corporation".* He recommends that KM focus should be on dynamic networks, *"instead of pursuing control mechanisms".*

*"One of the major shortcomings of TQM and QC philosophy was its narrow focus on problem solving and not other corporate issues" (Gamble et al., 2002).*

Some writers claim that the results achieved by KM are more sustainable than those gained by TQM and similar QM practices. *"TQM, BPR, CRM initiatives, although have resulted in firms attaining some competitive advantage, are replicable and not sustainable over a longer period of time" (Suresh, 2002)*

Cross (2001) from Xerox is one of the advocates of the co-operation between QM and KM (as seen in the next sections). However, at the same time he thinks sometimes quality is not effective anymore. *"There is a tougher challenge<sup>5</sup> if quality is overly mechanistic and too oriented towards regulatory compliance or efficiency. There are a number of examples where quality itself has become a barrier to organisational change and supports the status quo. The world has changed since quality became fashionable. The conventional old economy is concerned with producing products, while the new world is concerned with making sense, often in real-time. This sense-making aspect of the new economy is dramatically at odds with the manufacturing origins of quality. It's no longer a question of charts on the wall and continuous improvement. In today's environment, much of our conventional wisdom about business has to be questioned. For some organisations, quality is behind the times" (Cross, 2001).* He also strongly attacks the focus of QM on metrics and questions the statement that *"if you can't measure it, you can't manage it"*, saying that *"if you can measure it, it's often too late to manage it"*. Finally, he thinks that KM needs to take a step beyond quality and focus on innovation and creative business thinking. *"This involves breaking away from focusing on process that can inhibit innovation".*

QM focuses on standardisation and consistency, for example, as presented very clearly in ISO9000 or Statistical Process Control (SPC). One of the more active KM researchers warns against this approach, claiming it is not suitable anymore to the new business environment. *"Design of next generation knowledge management systems should ensure that they are not constrained by overemphasis on consistency" (Malhotra, 2002).*

Similarly, Malhotra (2002) also confronts the explicit control focus that characterises many QM tools. *"Organisational controls tend to seek compliance with pre-defined goals that need to be achieved using pre-determined 'best practices' and standard*

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<sup>5</sup> for QM/KM cooperation



operating procedures, Such organisational controls tend to ensure conformity by enforcing tasks definition, measurement and control, yet they may inhibit creativity and initiative. Enforcement of such controls is essentially a negative activity since it defines what cannot be done and reinforces a single loop learning with its primary emphasis on error avoidance".


It is a common theme in the KM literature to confront the mechanistic approach that is central to QM. McElroy and Firestone (2002) list the many KM authors who explicitly reject the relevance of such an approach to KM, including Amidon, Brown, Davenport, Prusak, Denning, Senge and many others.

Drucker (2002) claims that TQM is similar to Taylorism in that the worker needs to serve the system, while in true knowledge organisations it is the system that serves the worker and enables him to generate value. *"What made the traditional workforce productive was the system, whether it was Frederick Winslow Taylor's "one best way," Henry Ford's assembly line, or W. Edwards Deming's "total **quality management**." The system embodies the knowledge. The system is productive because it enables individual workers to perform without much knowledge or skill. In fact, on assembly lines and in **TQM** shops, a highly skilled individual can be a threat to co-workers and to the entire system. In a knowledge-based organisation, however, it is the individual worker's productivity that makes the entire system successful. In a traditional workforce, the worker serves the system; in a **knowledge workforce**, the **system must serve the worker**"* (Drucker, 2002).

### QM confronts KM

No evidence was found in the literature for members of the QM community to criticise KM. However, the case studies (Chapters 10-13) will show that such critics do exist.

### 5.5.5 Pattern: Overlapping

Pattern #	Title	Description	Graphical model
6	Overlapping	There is some overlapping or redundancy in responsibilities, tasks, resources or activities between the communities	

The author found in the literature two different approaches to the consequences of overlaps:



Morgan (2001) suggests that in the organisational context, redundancy can be a positive catalyst for creativity, by creating deep levels of understanding and multiple perspectives. The commonalities between QM and KM presented in this chapter


(e.g. in focus areas – people, culture, productivity, process etc) may lead to such overlaps.

Baum (1996) sees "organizational niche overlap" as a source of competition – *"the potential for competition between any two organisations is directly proportional to the overlap of their targeted resource bases or organisational niche"*.

From the analysis of problems of QM and KM (Chapters 3 and 4 respectively) it was apparent that both depend on three common resources: financial resources (e.g. budgets), the time of the internal customers, i.e. employees' time (to use QM and/or KM tools) and management attention. Therefore, QM and KM are in need of the same scarce resources. The author thinks that this can lead to productive synergies (Morgan, 2001) or to competition (Baum, 1996).



### 5.5.6 Pattern: Replacement

Pattern #	Title	Description	Graphical model
6	Replacement	One community grows, while the other shrinks.	

#### KM replaces QM



"Once companies have wrung everything they can out of TQM and other reengineering processes to become more efficient, they run up against a brick wall. Their stock prices might be flat compared to Internet, software and other knowledge-intensive companies. They need to start reaping the rewards of their R&D investments" (Nylund, 1999).

The Asian Productivity Organisation decided that "KM is a new thought area, replacing IT and TQM" and to re-align its projects accordingly" (APO, 2001).

In a survey of the financial services industry, executives were asked how organisations share knowledge and best practices. Many responded by ticking the KM tools (Communities of interest – 53%, Intranet – 50% etc. while TQM was the last in the list, with only 7% (Dore, 2001).

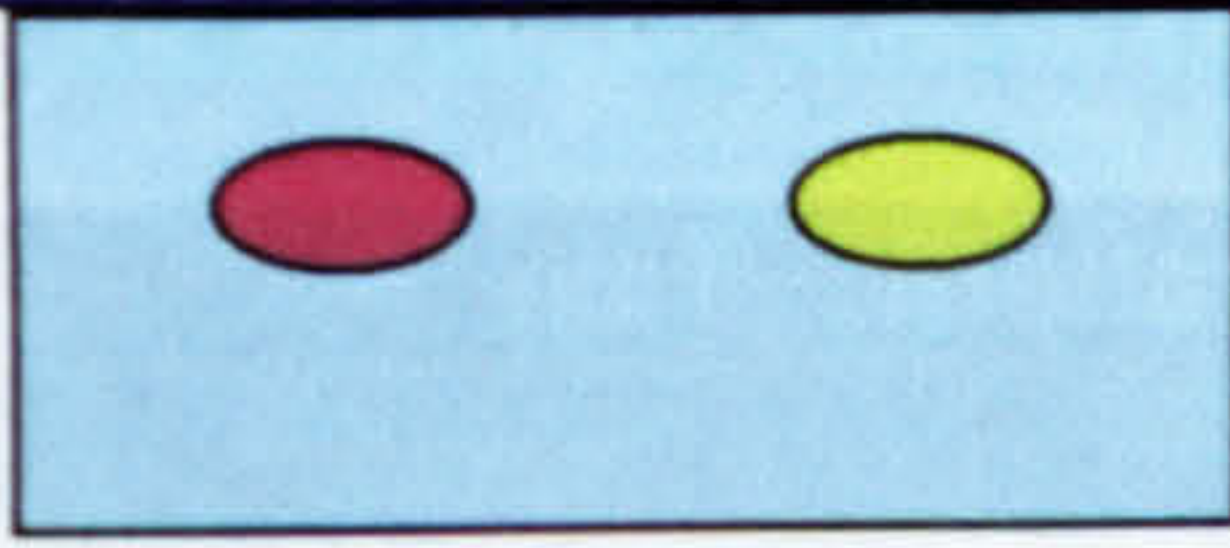
Several authors think that QM is being replaced by new ways of thinking, but its impact on the common business thinking has been sustained. "...Quality-control programs, on the other hand, **come and go**. TQM is by most accounts a past fad with limited appeal in today's markets. However, the revelation that quality matters that was a hallmark of the TQM age is still with us, and this insight is ingrained in the decision-making processes of our most respected industries, government agencies and educational institutions. TQM as we first learned about it will slip away into history as one of a myriad of themes that had its day in the sun and led to new ways of thinking that then led to newer ways of thinking" (Shaw, 2002).

Scharmer (2001) describes the shift in the journey of Hewlett-Packard towards continuous improvement. While in the early stages of Quality Management the focus was on product improvement, in the 80's they realised that they could achieve more by shifting their focus upstream towards the preceding processes that produce the results. "But once you and your competitors have the processes right, the question is, what will be next? For us, one critical new area is how managers can improve their quality of thoughts". Once arriving at this insight, HP started to focus on KM.<sup>6</sup>

<sup>6</sup> Although it was decided to categorise such shifts in focus from quality of product to quality of processes to quality of thought (and knowledge) under the "replacement" pattern, it can also lead to different interaction patterns – e.g. various co-operation patterns.



### 5.5.7 Pattern: Fading away

Pattern #	Title	Description	Graphical model
7	Dissolve	The two communities dissolve or significantly shrink.	

There are two different arguments for the fading away of management approaches like TQM, KM and many others:

- 'Faddism' – the approach is a management fad, and it comes and goes as part of the normal management fad life cycle. *"Like a phoenix, the management guru business seems to thrive on destruction and renewal. Management fads come and go, but fear and uncertainty is always part of their DNA"* (Gettler, 2002).
- The approach is well implemented, and is now embedded in the reality of the organisation; it becomes part of the standard operation procedures and taken for granted (Shaw, 2002).



Hamson (2001), who has surveyed the level of QM usage in the top fortune 1000 for the last 5 years, has witnessed a significant decrease in the number of QM programs. He attributes it to the **'taken for granted'** factor. *"I think there is one other phenomenon that's occurring and that's that a lot of the practices that were seen as innovative with respect to employee involvement and total quality management, have now just become standard operating procedures. They are no longer seen as programs. They're just in the basic thinking of people about how you organise work and how you deal with people and how you create systems"*.

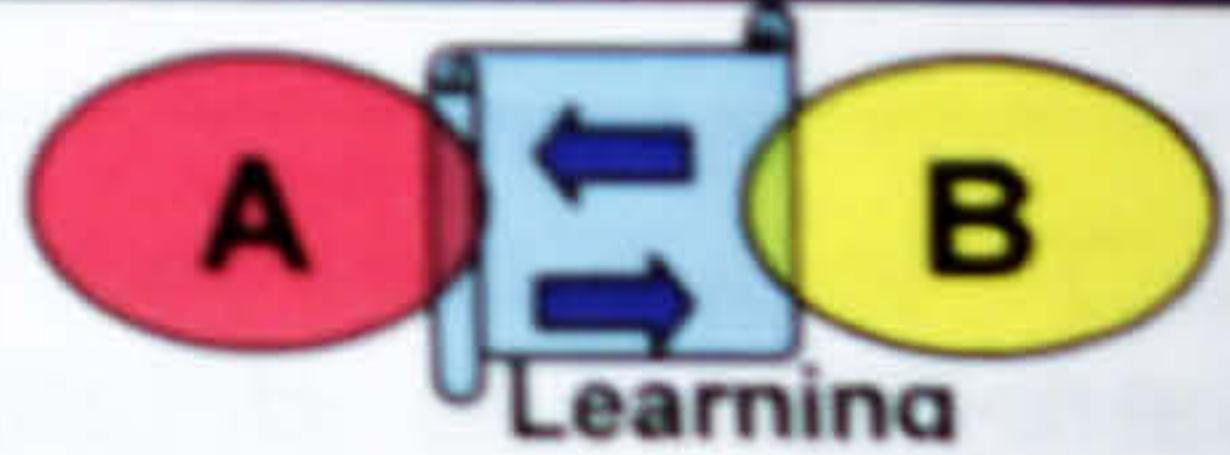
Peters (2001) explains why both QM and KM may disappear. He states that they forget to ask – 'what is the purpose?'. *"History teaches us nothing, as (who was it? Rousseau?) said. We had the discussion over TQM, and not for the first time, and we are having it again with knowledge management, and doubtless not for the last. In both cases, it's not an end in itself. We had so many conversations about how to get TQM initiatives started and sustained, rather than why we should. Knowledge management is either a means to some kind of end - better productivity, sustained success - or it isn't. We found (eventually) that TQM was a means to an end of productivity and customer satisfaction, and we continue to explore the means and ends. But we needed to ask whether it was worth worrying about, and so we do again with knowledge management."*

Mark Twain said that *"History doesn't repeat itself, but it rhymes"*. Cohen (1998) mentions this quote when he talks about researchers who look back to QM in order for insights into the likely course of KM. According to Gordon Petrash (state who he is), Quality used to be a specialised responsibility, but becomes now a general one, as it *"becomes part of everyone's job."* *"The*



same may prove true of knowledge: as creating an sharing knowledge become a normal and expected part of how work is done, knowledge management jobs may disappear" (Petrash, cited in Cohen, 1998).

### 5.5.8 Pattern: Learning

Pattern #	Title	Description	Graphical model
8	Cooperation I: Learning	Community A learns from community B and adopt concepts, lessons learned, methods and tools. The learning might be unidirectional or bi-directional	



#### Argument:

Wij (2000) provides an interesting explanation for why KM needs to learn from related disciplines. *"One doctrine of KM is the need to rearrange our affairs to avoid rediscovering what earlier thinkers have created, but maximize the reuse of valid knowledge and practices. We must adopt this tenet for our own work in KM. ...KM is not a results of people become smarter, only more knowledgeable by building on powerful concepts inherited from prior generations"*.

#### KM learns from QM:

Several authors took account of what the young discipline and community of KM could learn from QM.

Prusak (1999) states: *KM owes much to the quality movement. TQM taught us to embed values in the routine of work, to care only about the needs of the customer, and to constantly ask ourselves the question posed by TQM founder Edwards Deming, 'to what end are our labours?'"*

The professional career of Cross, from British Telecommunications (BT) UK, started in the company's TQM initiative and then developed into leading their KM program. He gives some examples in an article with the explicit title "How KM can learn from TQM". He thinks that the quality principles, - particularly those relating to behavioural and cultural change - are relevant to any KM strategy. For example, the progress in using the idea of virtual teams draws from the framework and tools provided by TQM in the area of collaboration and problem solving. Another example of possible learning refers to national awards, which are widely used by QM to attract management commitment (Cross, 2001).

The literature does report scattered efforts to adopt QM tools in order to improve the success chances of KM. Audit, for example, is an established QM tool, which some KM professionals claim to be critical for KM. *"The failure of most, if not all, unsuccessful implementation of knowledge management initiatives and programs can be justifiably attributed to the exclusion of the knowledge audit"* (Hylton, 2002). Antoni (2000) suggested that quality tools could be applied to inter-project learning, which is an important domain of KM.

In his book, "Knowledge Management Methods", Wij (1995) provides a large portfolio of many KM tools and methods. Several are directly adopted from TQM, such as the use of Ishikawa's fish-bone problem-solving diagram.

In 1995, a group at Massachusetts Institute of Technology (MIT) initiated a community of academics and practitioners titled Total Data Quality Management (TDQM). The group explored the improvement of the quality of data, information and




knowledge. For example, the application of Quality Function Deployment (QFD) to the improvement of knowledge reuse in R&D was explored (Dvir and Evans, 1998).

### **QM learn from KM**

Cobb (2000) argues that by learning from KM, QM can *“revitalise its systems and make them more dynamic and more effective by incorporating knowledge management capabilities”*.

### **5.5.9 Pattern: Support**

Pattern #	Title	Description	Graphical model
9	Cooperation II: Support	Community A supports community B in achieving its goals ( <b>beyond</b> the learning interactions described in the previous model. The learning might be unidirectional or bi-directional	

### **QM supports KM**



Wij (2000) offered a list of disciplines that supports KM. *“KM will continue to evolve and draw upon support from many theoretical and methodological disciplines”*. QM (which is part of the management sciences category) is one of many supporting methodologies and sciences.

The research project “Knowledge Angels”, funded by the European Commission and begun in 2002, aims to establish a multi-disciplinary community of KM practitioners and researchers. Its mission is to explore ten “burning issues” in KM – one of them

is the *“improvement of the managed knowledge”*. It is expected that the community will rely on QM professionals towards realising this objective (Patricia, 2002).

O'Dell and Grayson (1998), in a paper titled “If only we knew what we know”, describe how Xerox has used the a combination of three quality tools, namely Internal Best Practices, Benchmarking and Audits, as a way to boost knowledge sharing and reuse of internal knowledge in the company.

Scher (1999) shows how QM can support KM by helping it in implementing four principles, which are also central to QM: “Customer Focus, PDCA cycle, Organisational Culture and Process Control”.

Lim *et al.*, (1999) show how Deming's PDCA (Plan Do Check Act) cycle can be applied to systematic planning of a KM system. They also suggest that KM should adopt the QM measurement concepts. This can help organisations to pinpoint the value of knowledge and manage knowledge more systematically.

Cobb (2000) suggests that QM can support KM in establishing a sustainable program: *“companies that are considering knowledge management efforts can improve the probability of success and effectiveness of those efforts by understanding the benefit to be gained by having a well-designed business and quality management system as a foundation”*.

### **KM supports QM**

As was shown in the previous section, Lim *et al.*, (1999) suggested ways by which QM can supports KM. However, this is a bi-directional interaction. The title of the




paper is *"Managing Quality through Knowledge Management"* which indicates that the objective of KM is to support the quality strategy of the organisation.

Del Nelson (2002) wrote in an online community dedicated to Deming's theory, that KM *"offers an extreme improvement in the tools and procedures that can be used in developing a further understanding and appreciation of Deming's Science of Profound Knowledge. It can be used by a leader with Profound Knowledge to lead others to an appreciation of Deming's approach as the next needed phase in KM"*.

Davenport and Kalhar (1998) show how one of the functions of QM, Customer Support, can benefit from the KM tools and initiatives already existing in their organisation, in order to enhance reuse, sharing and exploitation of customer support knowledge.

In an article titled *"Developing TQM: The knowledge management contribution"* McAdam (2001) and others propose a KM model which can support the development of TQM. The conclusions indicate that employee participation is an essential part of TQM. Employee knowledge leads to increased participation in business improvement within organisations, and leaders have an essential role in developing groups that can advance new knowledge. This knowledge can increase innovation, and reduce functional silos, especially for dispersed network based organisations (McAdam, 2001).

#### 5.5.10 Pattern: Sharing

Pattern #	Title	Description	Graphical model
10	Cooperation Sharing	III: The two communities share some resources and/or operations. They continue to manage other resources and activities separately.	



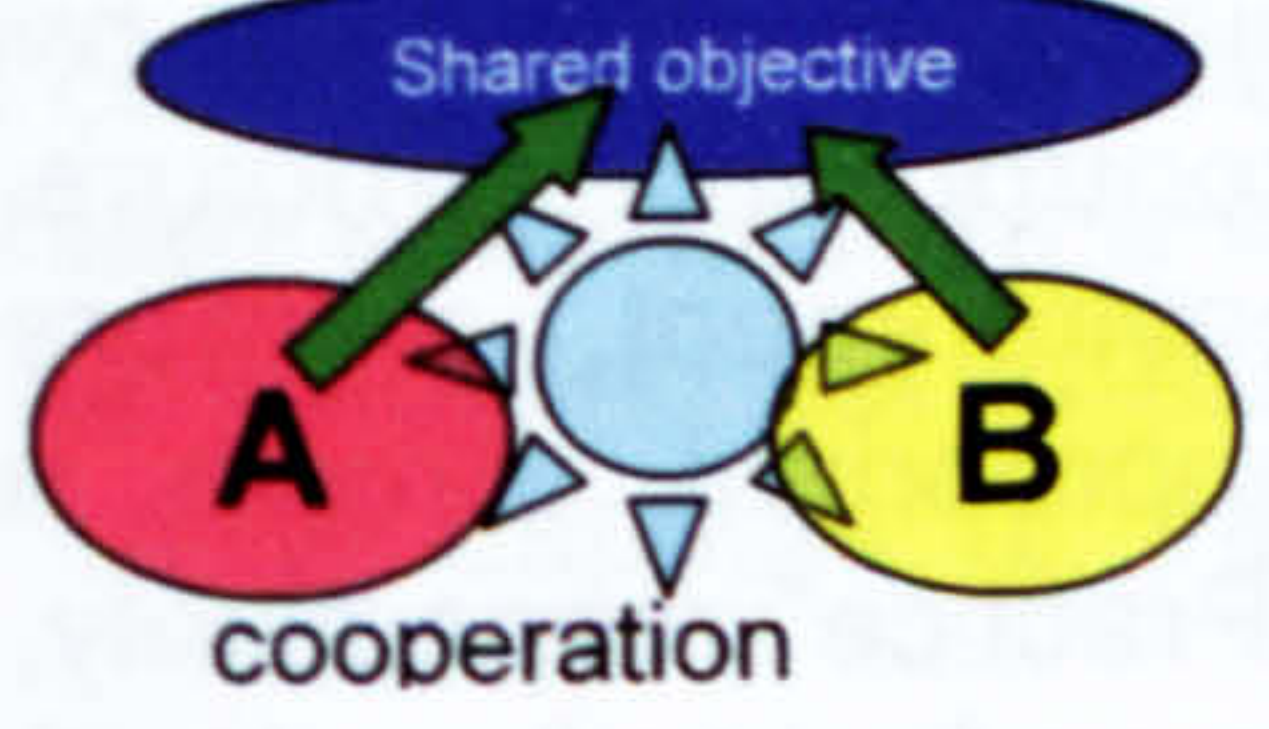
In an effort to increase the success chances of Joint Ventures in a Hi-Tech company, the QM, KM and HR corporate functions worked together to define and implement a systematic Joint Venture process (Kennet *et. al.*, 1999)

Cross (2001) states: *"Where quality has strong strategic focus, then partnership (between QM and KM) is essential. They can learn from each other and find that they have similar goals"*.

In Australia, there is a growing awareness for the potentially new role of TQM in addressing the knowledge economy challenge. This is obviously a challenge shared with the Australian KM community. *"The role of TQM needs to be defined in terms of its future application rather than past effectiveness. This means positioning TQM in the "knowledge economy". Knowledge is now the key element of wealth creation in developed economies; and TQM should be a central element of this"* (James, 1997).



### 5.5.11 Pattern: Holistic approach

Pattern #	Title	Description	Graphical model
12	Cooperation IV: working together toward a common objective (holistic approach).	The two communities cooperate in effort to progress shared organisational objectives or to satisfy a common customer. KM & QM are part of the management "toolkit".	



Much has been published about organisations that, after having deployed considerable financial and human resources, have abandoned improvement initiatives because tangible benefits were not evident. Investigations into such situations typically reveal the absence of a clear, overall improvement strategy.

Cayer (2001) views KM, as well as TQM, Project management and many other improvement tools as potential components of such an overall improvement strategy.

In 1998, in a response to the concerns of academics and practitioners regarding the 'separate silos' in which different organisational-excellence schools were operating, the *Multinational Alliance for the Advancement of Organisational Excellence (MAAOE)* was established. Among the disciplinants of MAAOE participants are; accounting, continuous quality improvement, finance, human resources development, information technology, leadership and ethics, management, marketing, operations management, psychology and statistics (Dalrymple, 1999).

Wij (1995) states that "*KM complements and must be considered in combination with modern management methods such as Dr. Deming's TQM.*" The KM perspectives and approaches, as methods, help promote and enhance such practices as TQM.

Prasad (2001) shows how KM and TQM can work together to achieve "Total Value Management" in product and process development. The logic is that "*with the TQM process alone, it is difficult to accomplish all aspects of Total Value management such as x-ability, cost, leanness, responsiveness, and agility...*" Therefore, KM is required in order to complement the approaches and tools of TQM.

Skyrme and Amidon (1997) suggest that knowledge management has an impact on different organisation functions and each can contribute unique value to KM. QM is one of many relevant functions, such as Human Resources, R&D, Information Technology, etc.

Cobb (2000) draws a continuum for the need of organisation to have a high level of certainty, and the need to have high level of flexibility. By well-considered implementation of QM and KM, the optimum point (which is specific to each organisation) can be supported. This continuum is presented in the following figure.

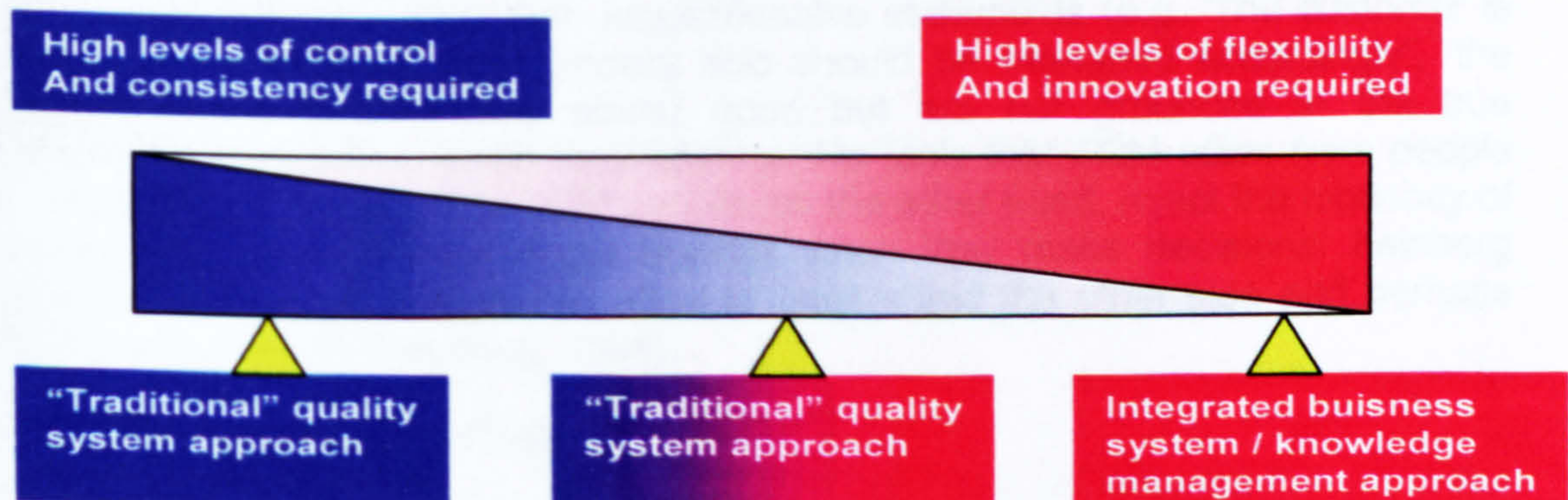



Figure 5-5: The QM/KM continuum (Cobb, 2000)



**Balancing Chaos and Order:** Morgan (1996) writes in "Images of Organisations" about *"How opposing forces can drive change"*. The "dialectical contradictions" between different disciplines, which act in the same organisation, should be considered carefully, and can drive transformation. Many writers identified the dichotomy between two very different approaches: the one which favours planning, control and structure, and the other which believes that in today's complex environment, a more self-organizing spontaneous way of doing business is appropriate. Brown and Duguid (2000) call these approaches "Process" and "Practice" respectively, and suggest that both need to be managed and balanced. *"It is undoubtedly a hard balancing act. Lean too much toward practice, and you may get new ideas bubbling up all over the place, but you will lack the structure to harness them. Lean too much toward process and you get lots of structure but too little freedom of movement to strike that initial spark. Finding the right balance is a central task for managers everywhere"* (Brown and Duguid, 2000). They explicitly put KM in the "Practice" side and re-engineering on the "Process" side. The way re-engineering is described by them enables one to add QM to this side of the balancing act.

#### 5.5.12 Pattern: Convergence

Pattern #	Title	Description	Graphical model
2	Full merging	The two communities are merged into one.	



There was no evidence found in the literature for a full convergence of QM and KM, although in the author's opinion many similarities could make it a viable option.

In one of the interviews conducted in the research, the Quality Vice President of a hi-tech company in the defence area did mention the possibility of merging the QM and KM groups into a Knowledge and Quality Management Department. She added that such a move would only take place after a decision by the CEO.



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## 5.6 QM, KM and Third parties

This research focuses on the interactions between two specific communities: QM and KM. However, one can learn also from interactions between these communities and other communities, which are referred to as 'third parties'. The following list is not comprehensive but provides some examples, which mirror some aspects of the QM/KM situation.

### 5.6.1 QM and third parties

Several disciplines are mentioned in the literature in relations to QM:

**Total Quality Management (TQM) and Business Process Reengineering (BPR):** in the literature, BPR and TQM are frequently mentioned as rival organisational development models. The BPR enthusiasts declared the end of TQM, while the TQM followers predicted the quick failure of BPR and described it as a passing fad. BPR supporters stated that TQM contradicted conventional management practices of Western countries and therefore required careful scrutiny. On the other hand, TQM supporters saw BPR as being in conflict with some of the fundamentals of good management and stressed that steady improvement, well managed across a broad front, was the most effective way to get, and stay, ahead (Jarrar and Aspinwall, 2000). Recently, further experience with both TQM and BPR has brought the two camps closer. Professionals have started to discuss how the two strategies are related and complement each other (Chaudron, 2002)

**Quality Management (QM) and Environmental Management System (EMS):** The focus on the management of environmental challenges in the last decade led to several attempts to integrate a quality management system with an environmental management system. This required a working understanding of how the two are compatible. Consequently, in the planning process, the most important aspect to consider is the **identification of the commonalties** that exist between the QMS and the EMS. The ISO14000 standard represents some of those integration efforts (Wilson, 1999).

**QM and Management Accounting:** many TQM professionals found the "cost of poor quality" approach an effective tool to bridge between the concerns of the TQM professionals (Quality) and those of the management (the financial bottom line). This is an example of a relatively successful merger of very different approaches (Jeeves, 1993)

**TQM and Gut-feeling management:** Feinberg (1998) explored why many managers tend to resist TQM. He feels that unquestionable statements (e.g. 'The customer is always right', 'everything is a process and should be managed accordingly', 'the employee knows better') may sound good but are not grounded in the true requirements and reality, which they operate. He feels that TQM takes from people the 'freedom to manage'. The TQM people, on the other hand, reject the tendency of managers to use intuition and gut feelings when they make decisions. Feinberg suggest to both sides to make an effort to understand the other side and perhaps benefit from its merits (Feinberg, 1998).

### 5.6.2 KM and third parties

**KM and e-technology:** the focus (some claim the excessive focus) of KM on Information Technology (IT), and the request to link KM to concrete benefits, led



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many practitioners to try to converge KM with e-technology approaches. For example:

**KM and E-learning:** Is e-learning a branch of KM? What are the overlaps between them? These and many other interactions-pattern questions are discussed in both the KM and e-learning literature, and are similar to the questions addressed when examining QM/KM interactions in this research (Lamont, 2001). Lytras *et. al.* (2002) describes a three-dimensional integration model, which allows particularly the mapping of each integration case using three axes: Dynamic content (KM processes), Learning process value, and application integration. The model helps to visualise the added value in KM and e-learning integration. (Lytras *et. al.*, 2002).

**KM and e-commerce:** Kocharekar (2001) proposes a name for such convergence: *"There is synergy between e-Commerce and knowledge management. E-commerce is about transactions with external stakeholders. Knowledge management is about internal collaborative endeavours and the sharing of information and experience. K-commerce is the collaboration and sharing of knowledge with external stakeholders"* (Kocharekar, 2001).

**KM, Complexity and Organisational Learning:** A more strategic synergy of KM with other approaches is suggested by McElroy (2000) who states that KM, complexity and organisation learning communities offer interesting opportunities not only for a "meeting of minds" but much deeper integration. *"What makes the imminent convergence of these three groups so interesting is that each has much to gain from it, but none of them seems to see it coming. With heads down and blinkers attached, each has been wrestling with its own narrow scope of interest, rarely stopping to consider cross-disciplinary possibilities"*. (McElroy, 2000).

**KM and Accounting:** The Intellectual Capital model is a well-known example of an attempt to marry two very different approaches and indeed professional communities. There are many arguments for this synthesis. Some more practical ones: Intellectual Capital enables the KM professionals to speak the language and address the concrete concerns of top management, and on the other hand, the accounting community wins a chance to bring their reports back to relevancy in the new economy age (Mouritsen, 2002).

**KM and Competitive Intelligence (CI):** several organisations tried to converge KM and CI, Shell Services International, for example, reports of considerable benefits that were gained from extensive bi-lateral support. *"By using the CI/KM system, the analyst has more time devoted to higher value-added tasks such as simulation/strategy"* (Breeding, 2000).

## 5.7 Conclusions

This chapter has looked at different patterns of interactions between QM and KM.

The case for co-operation between QM and KM was outlined, based on two different rationales: the commonalities and similarities between these two communities and the differences between them – and especially complementary relative weaknesses and strengths. It is proposed that the combination of commonalities and differences can be potential sources of advantage for those organisations that implement both practices.



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Another perspective for the case of co-operation was gained by revisiting the problems of QM and KM professional communities, as analysed in the previous chapters. It seems that many of these problems might be addressed directly through QM/KM interactions.

Before exploring the QM/KM interactions in reality, a theoretical model, which suggests a wider range of possible interactions between the two professional communities, was devised. The model included 12 theoretical patterns, covering the spectrum from complete ignorance to complete co-operation.

This model provided a framework for examining QM/KM interactions as represented by the literature. It was found that there were enough examples to populate most of these patterns. Although there may be a case for the co-operation patterns, it was found that many of the references in the literature addressed other patterns, such as ignorance, confrontation, and take-over. Moreover, many of the references addressing the co-operation patterns used the language of “should” or “could” (i.e. “what can KM learn from TQM”).

This chapter set the aim of answering the research question:

***Q2: What are the potential interactions between QM and KM professional communities?***

As will be discussed in later chapters, understanding the co-operative and non-cooperative potential patterns of QM/KM interactions will be used to understand better what shape the IC flows can take. Therefore, it will help in answering research question 4 - ***What are the potential flows of Intellectual Capital between the QM and KM professional communities?***

Many potential interactions have been identified. Moreover, it was discovered that all are referred to in the literature. There is no dominant model. However, several relationship patterns have been discussed with greater frequency in the literature, these are:

- ❑ mutual or unidirectional ignorance
- ❑ many references to “attacks” of KM against QM
- ❑ of all co-operation models, the most mentioned one is the “KM learns from QM”.

In conclusion there is a large gap between the potential case for co-operation as demonstrated in the four cooperative patterns, and the other patterns, which are not cooperative. This conclusion can serve as a reality check and warning sign for the researcher. In the following chapters the potential flows of ICs between QM and KM will be explored. What needs to be remembered is the fact that there is a case for potential of such flows, which does imply that they can occur in reality.

The author thinks that a simplistic application of only one potential pattern will not make sense. Considering the complexity of the QM and KM communities, the author does not believe that any one pattern will allow a full description of the co-operations of a specific pair of QM and KM communities.



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The literature shows that in many cases there are mixed interactions. For example, in the case of Xerox, at least three interaction patterns have been recognised: support, learning and confrontation (Cross, 2001). The KM theorist Wijn (2000) also referred to several interaction patterns. However, mapping the QM/KM interactions in the case studies into the twelve theoretical patterns (Chapters 9 and 10) will provide better understanding of the complexity of QM/KM interactions in reality.

There are many similarities between the specific case of QM/KM multi-facet interactions and the case of interactions of KM or QM with "third parties" communities and disciplines. This is interesting because it may indicate that some of the conclusions



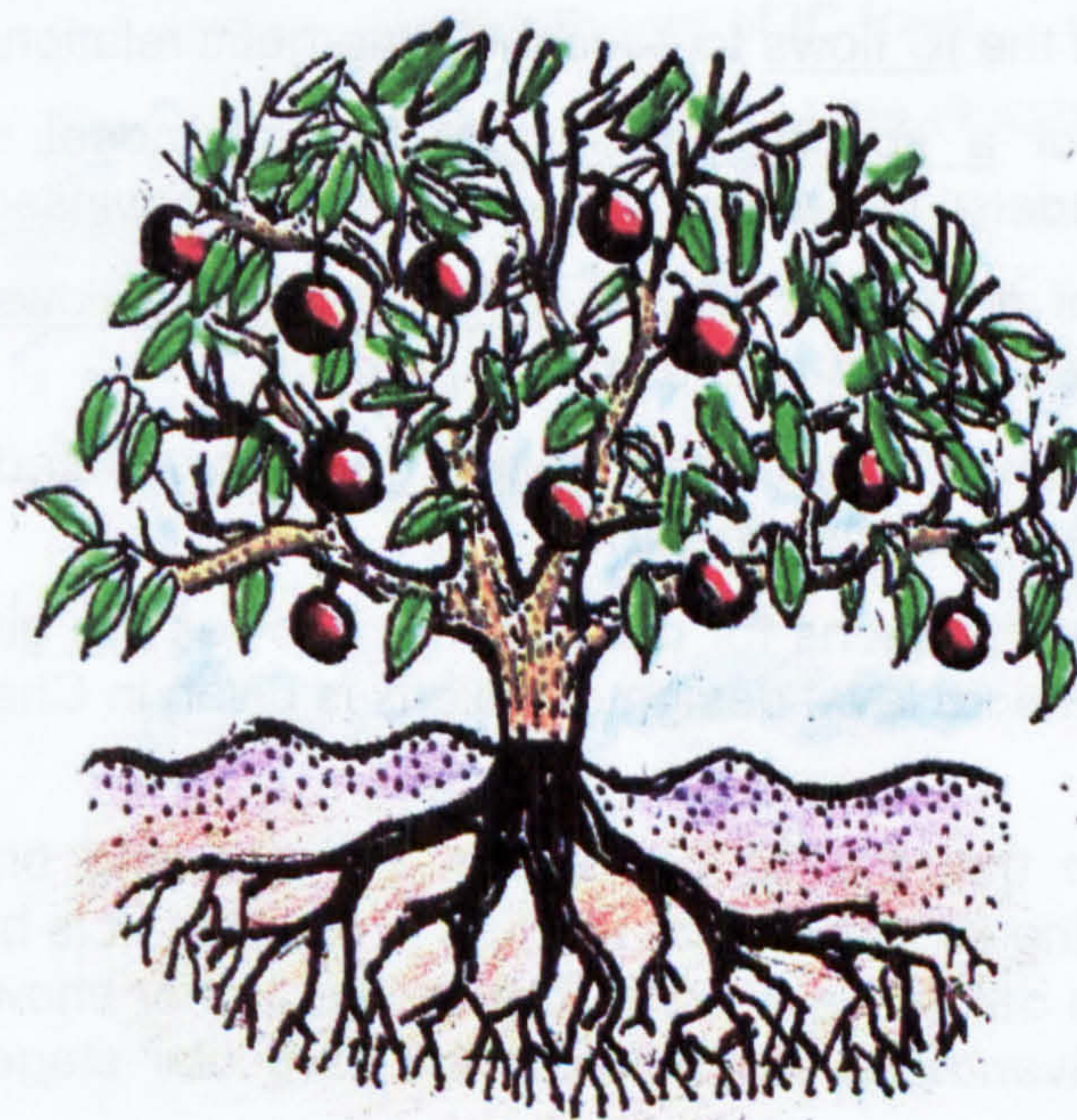
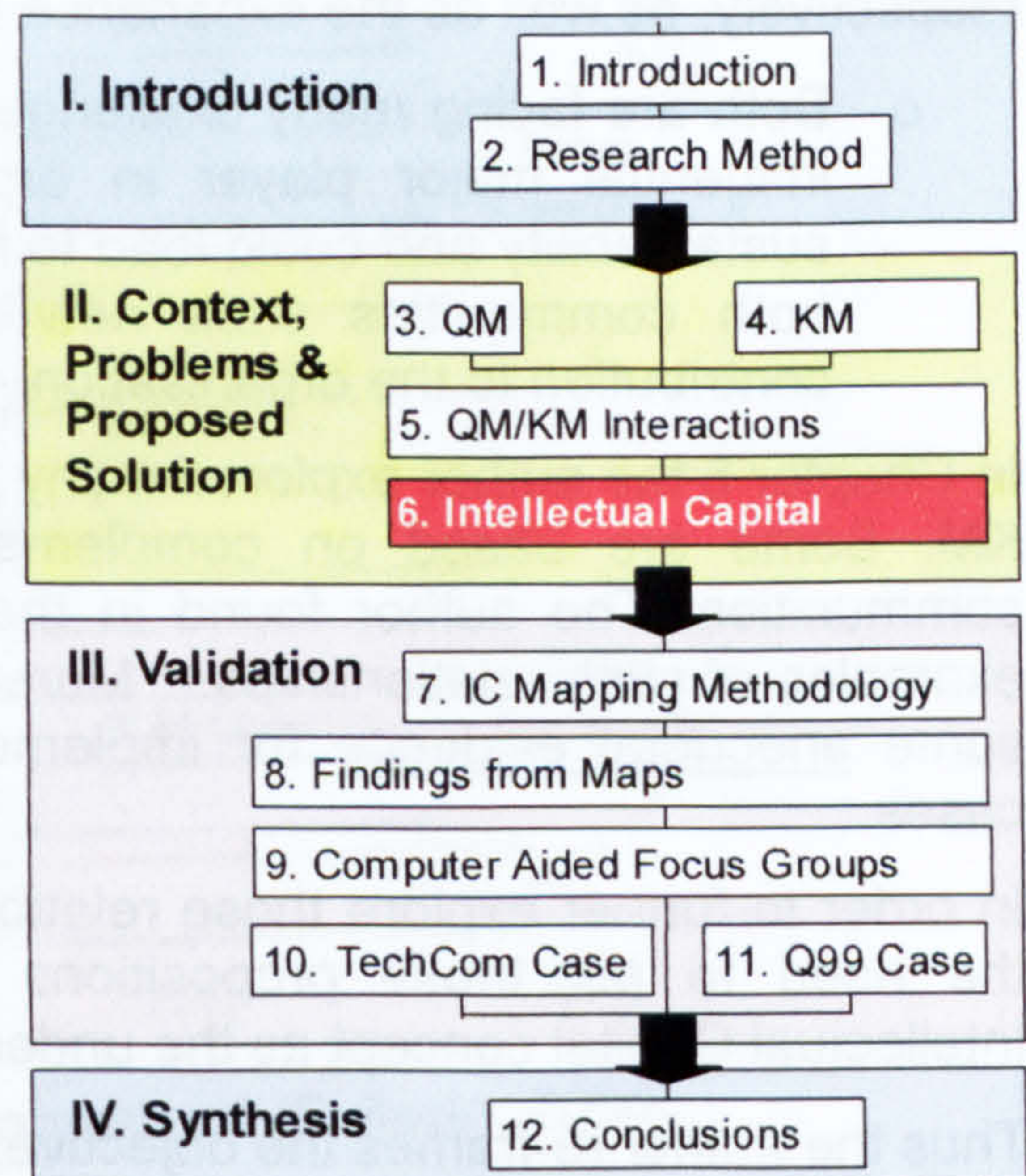
## 6 Intellectual Capital – the Framework of the Research

### 6.1 Aims

The research uses the theory of Intellectual Capital (IC) as its theoretical framework. This chapter aims to introduce the concepts related to Intellectual Capital and to put it in the context of the professional communities.

At the end of the chapter the reader will understand:

- What intellectual capital is?
- How the IC movement has evolved?
- How Intellectual Capital assets can be categorised?
- How IC assets are commonly assessed and visualised.
- Which particular IC model was selected to serve in this research, and why?
- How and in what context IC models are commonly used?
- What are IC asset flows?
- How can IC be applied to the professional communities?
- Which IC assets might potentially flow between communities?
- Why the concept of IC flows might be useful for this research?
- How IC flows can help answer the research question?



*Intellectual Capital includes the hidden values that are the current and potential sources for wealth creation (Edvinsson, 1999)*



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## 6.2 Introduction

The exploration of the literature around QM and KM communities in Chapters 3 and 4 respectively, as well as the experience of the author, revealed that:

- o Both are facing many challenges, which stop them from becoming an influential major player in organisational reality (KM), or risk its sustainability and could lead to its decline (QM). The author found that both communities seek new ways to enhance their impact and contribution to the organisation.

In Chapter 5 the author explored many potential relationships types between QM and KM. Some are based on complementary strengths and weaknesses of these communities. The author found in the literature some scattered propositions and examples of such relationships. Moreover, the literature survey provided access to some anecdotal evidence for implementation of those relationships in real world cases.

In order to further explore those relationships in a systematic way, the author faced the need to put those propositions into a framework. The author chose the Intellectual Capital concept as the underlying concept for such a framework.

Thus the author re-frames the objective, using the IC language:

**Identify the potential flows of Intellectual Capital between the QM and KM professional Communities.**

In this chapter the author aims to introduce the terminology and concepts involved in IC and justify the above choice. In order to do so, the author deconstructs the issue into five sub-decisions the author took. Each will be introduced using the relevant literature, and then justified.

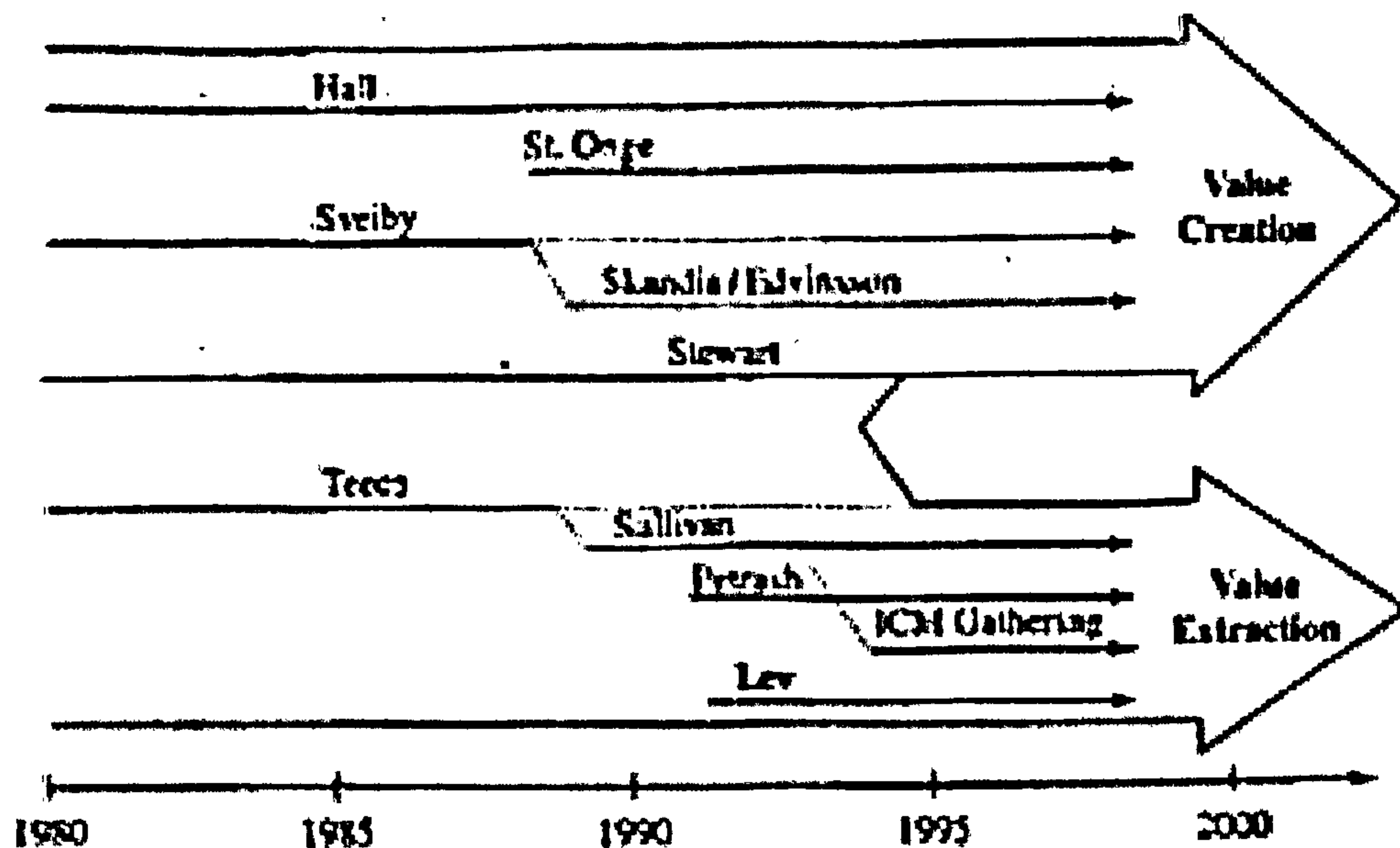
- i. The choice of the "Intellectual Capital" as an investigation framework
- ii. The choice of the IC flows to describe synergetic relationships.
- iii. The choice of a specific Intellectual Capital model, out of many alternative models. The author chose the Roos - Edvinsson model.
- iv. The choice of a specific way to identify potential flows. The author chose an enhanced self-assessment approach.
- v. Many smaller level detailed tool design decisions related to the actual way this approach is implemented.

The background and justifications for the first four choices are given in this chapter, while the details of the micro level design decisions is given in Chapter 7 (*IC mapping methodology*).

It is important to note that the IC concept is an emerging one. Sullivan (2000) mapped the history of the IC movement, starting in the 80's. It is beyond the scope of this thesis to explore in detail this history. Rather, the author shows the map in order to demonstrate two advantages embodied in the particular stage in the lifecycle of this movement:



- it provides an opportunity to add to it at its early shaping stage.
- and yet, it is mature enough to provide a solid framework for the research and starting point for the tool the author will design.



*Figure 6-1: The history of the IC movement (Sullivan, 2000)*

In this chapter the author will firstly describe the context of using IC in the research and focus on defining what IC is, articulating what the author means by ICs of professional communities and picking a particular model, and describing what are flows of ICs (constructs 1 to 4 respectively).

Then the more technical aspects of how IC can be assessed and visualised are described, and the choice of particular assessment and visualisation approaches is justified (Constructs 5 and 6). The author discusses the potential uses of IC assessments and visualisation tools.

The author finishes by integrating all these constructs into a coherent framework that re-frames the research agenda using the theory of IC tools.

The following figure shows the logic and structure of the chapter:

In the following sections the author will describe each of the above constructs, and how they are integrated into one research framework.



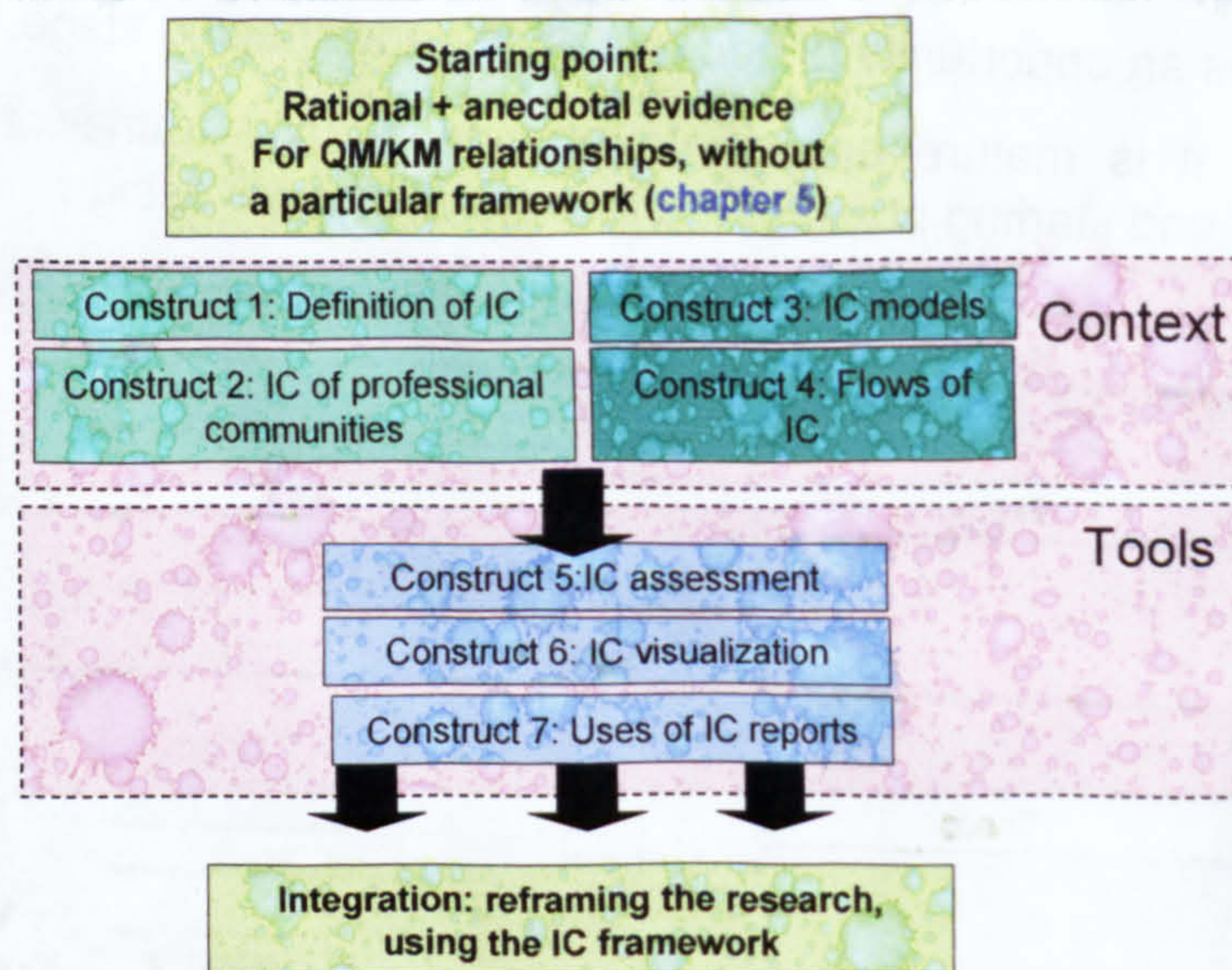


Figure 6-2: Deconstruction of the research IC framework

## 6.3 Construct 1: What is Intellectual Capital?

The notion of Intellectual Capital (IC) started to evolve in the early 90's. It has captured considerable interest since then in the area of the knowledge economy; most management thinkers agree that the IC of an organisation is the basis for its competitiveness and its most important resource (Pasher, 1998).

A large body of literature has evolved around the topic of Intellectual Capital. A large proportion of the papers and books on the subject have been submitted by a group of about a twelve academics and management practitioners who defined the field – building on each other's thoughts. This group includes people like Baruch Lev, Leif Edvinsson (2002), Patrick Sullivan (200), Johan and Goran Roos (1998), Nick Bontis (1996) and Verna Allee (1997).

Although they all have somewhat different definitions of IC, a convergence of all definitions begins to emerge. All definitions have three common aspects:

- ☐ The importance of **intangible assets** (called also "resources" and "capital").
- ☐ The focus on the transformation of these assets into **value**.
- ☐ Most detailed definitions refer to three sub-phenomena that constitute the concept of Intellectual Capital: **Human** capital, **Relational** capital and **Organisational** (or **Structural**) capital.

Here are several definitions, which complement each other:

**ICS group:** "Intellectual Capital (IC) includes all of the intangible resources that contribute to the creation of value for the organisation. These include the knowledge, competence and skills of people, working methods, processes and systems. It also includes the culture that supports the people, the image in the market place and relationships with customers, alliance partners and suppliers" (ICS 2002).

**Stewart (1997):** "The intellectual material – knowledge, information, intellectual property, experience – that can be put to use to create wealth".



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**Edvinsson and Malone (1997):** *“Intellectual capitals are the hidden roots of value”.*

**Ward (2000):**

*“The sum of an enterprise's:*

- *collective knowledge, experience, skills, competences, and ability to acquire more*
- *work outcomes, services and other intangible manifestations of the application of these to the strategic intent of the enterprise*
- *relationships and processes that facilitate this application, its delivery of value to the marketplace, and its delivery of strategic advantage back to the enterprise.*

**Sullivan (2000):** “Intellectual capital is knowledge that can be converted into value. This definition encompasses inventions, ideas, general know-how, design approaches, computer programs, processes, and publications”.

As his working definition, the author chose to use the following synthesis of the above definitions:

**Intellectual Capital includes all of the intangible resources that can be converted into value for the organisation. It includes the capabilities of its people, its internal and external relationships, and its processes and structural assets.**

## **6.4 Construct 2: The unit of analysis – professional communities**

The concept of Intellectual Capital in general and Intellectual Capital measurement in particular, is applied to various organisation forms:

- ❑ **Corporations** – in most IC reports, the unit of analysis of the corporation (as a whole or its business units). The cases of the IC reports of Skandia, Celmi, Ericsson, Telia and Carl Bro were widely published, but many other organisations took a similar road (Sullivan, 2000, Sveiby, 2000).
- ❑ **Networks of companies** – the IC model was applied successfully to several networks of SME (Small Medium Enterprises) in Australia (AusIndustry Network) and Norway (SND network) (Roos *et. al.*, 1998)
- ❑ **Nations**: in the late 90's, several IC reports for nations were generated and widely published – Sweden, Israel, Denmark, United Kingdom and the Netherlands (Edvinsson, 1999). The literature on ICs of nations, regions and commercial or public organisations is quite rich. For example, a search of ProQuest found 365 articles mentioning “IC of nations” published in 1/1999-2/2003.
- ❑ **Individuals**: in 2000 the Swedish company Skandia launched a three-year program to measure its intellectual capital using its Dolphin Navigator system. The 1<sup>st</sup> year was dedicated to measuring the IC of the corporations



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and its Business units, the focus in the 2<sup>nd</sup> year was the IC of the company's departments, and in the 3<sup>rd</sup> year the plan was to establish individual IC navigators by Skandia's employees (ICVisions, 2003).

### **What about Professional Communities?**

The author was surprised to discover that the extensive literature on IC hardly refers to the specific case of professional communities. To be more precise: the terms "IC" and "professional communities" are linked frequently in popular publications – mostly related to advisement. For example, *"The Navy requires a career path that ensures the development, education and retention of technically skilled intellectual capital"* (Navy, 2002).

What is missing is serious research in this area. The author did not find any publication that reports on either theoretical work or practical attempts to measure the IC of professional communities. One exception is a paper by two researchers who did refer to the social capital of professional practices, as an example of IC of a "social collectively" (Naphiet and Goshal, 1997).

However, the author does not think that the reason for this gap is that the IC concept is not applicable to professional communities. Not surprisingly, a rough effort to map the reality of Professional Communities against the common categories of IC suggests that the concept might be applicable. For example:

**Relationships capital** – it 'makes sense' that the quality of relationships of a community with its 'customers', for example, is linked to its ability to create value.

**Structural capital** – a core activity of professional communities is to develop and provide their members with proven methods, processes, procedures, and other knowledge assets called "structural capital" in the IC language.

**Human capital** – it is almost trivial to show that professional communities are (or should be) based on and contribute to the human capital of its members.

The applicability of the IC concept to professional communities is examined in great details in the case studies presented later in this thesis.

## **6.5 Construct 3: Models of IC**

### **6.5.1 Overview**

Although the IC discipline is relatively new, it has already developed many alternative approaches to the measurement of IC. The author identified 21 available models, and categorised them into groups, as illustrated in Figure 3:

a. Methods based on financial valuation of the IC assets of the organisation, classified into two groups:

1. **\$-Valuation at the company level** (Top right quadrant)
2. **\$-Valuation at the specific IC components level** (Bottom right quadrant)

b. Methods based on non-financial valuation:



- 3. **Non-\$ valuation, organisation level** (Top left quadrant)
- 4. **Non-\$ valuation, at the specific IC components level** (Bottom left quadrant). These methods are usually represented as scorecards i.e. the various components of intangible assets or intellectual capital are identified and indicators are generated and reported in scorecards or as graphs.

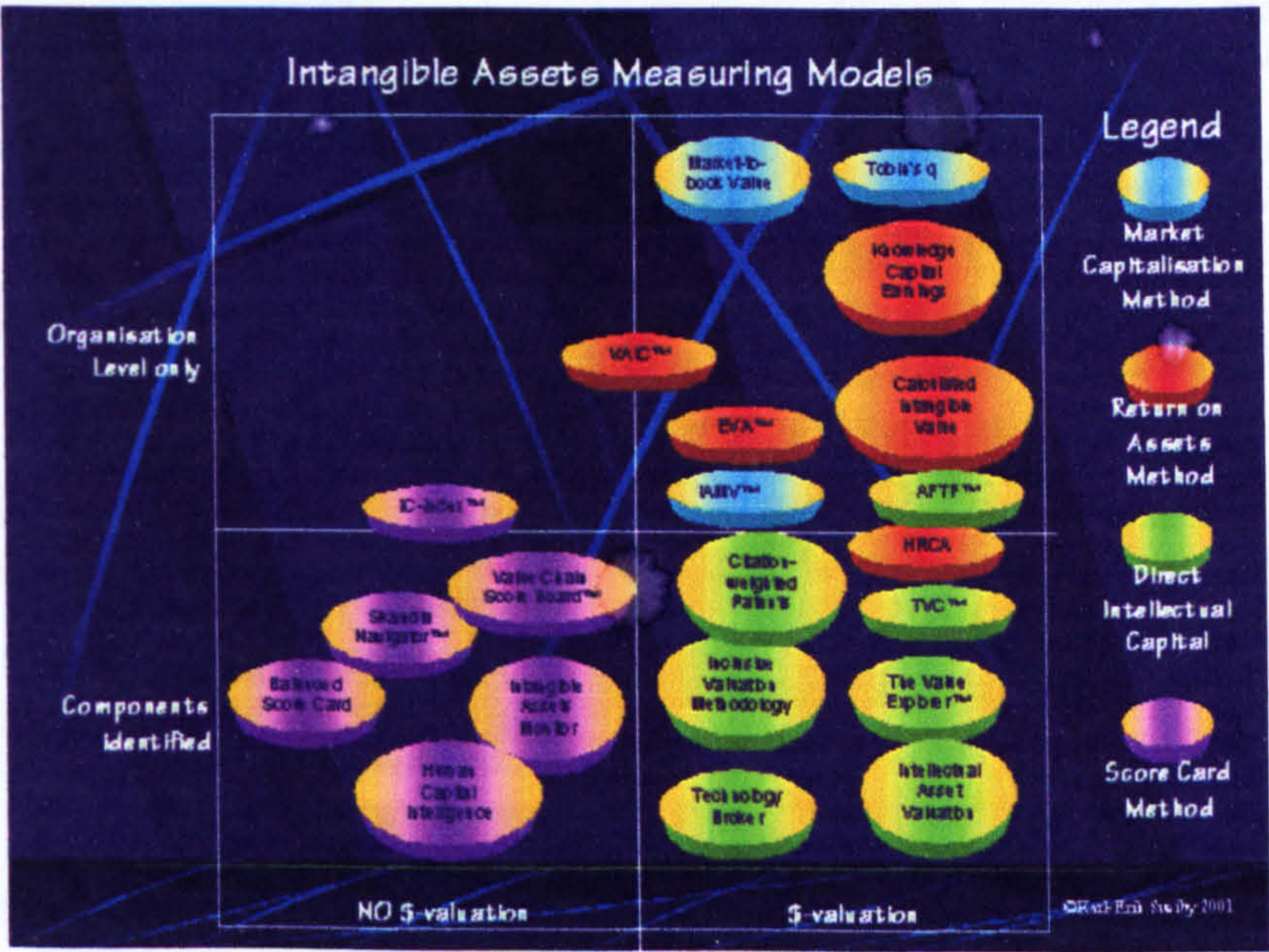


Figure 6-3: Categorization of IC models (Sveiby, 2002)

The author agrees with Sveiby’s note that “no one method can fulfil all purposes; One must select method depending on purpose, situation and audience” (Sveiby, 2002).

The author believes that out of all methods, the ones clustered in the lower left quadrant are the most relevant ones for this research. Two arguments support this choice:

1. Firstly, \$-based valuation is more appropriate in the case of commercial organisations and less suitable for professional communities, where financial transactions are not common. Therefore, the author prefers non-financial models.
2. Secondly, since the author is interested in the potential of flows or specific types of IC assets between communities, the “component level” models are more suitable than the organisation-level approaches.



## 6.5.2 Several models

The author has examined several IC models as possible frameworks for the research. The following table summarises the key features of each.

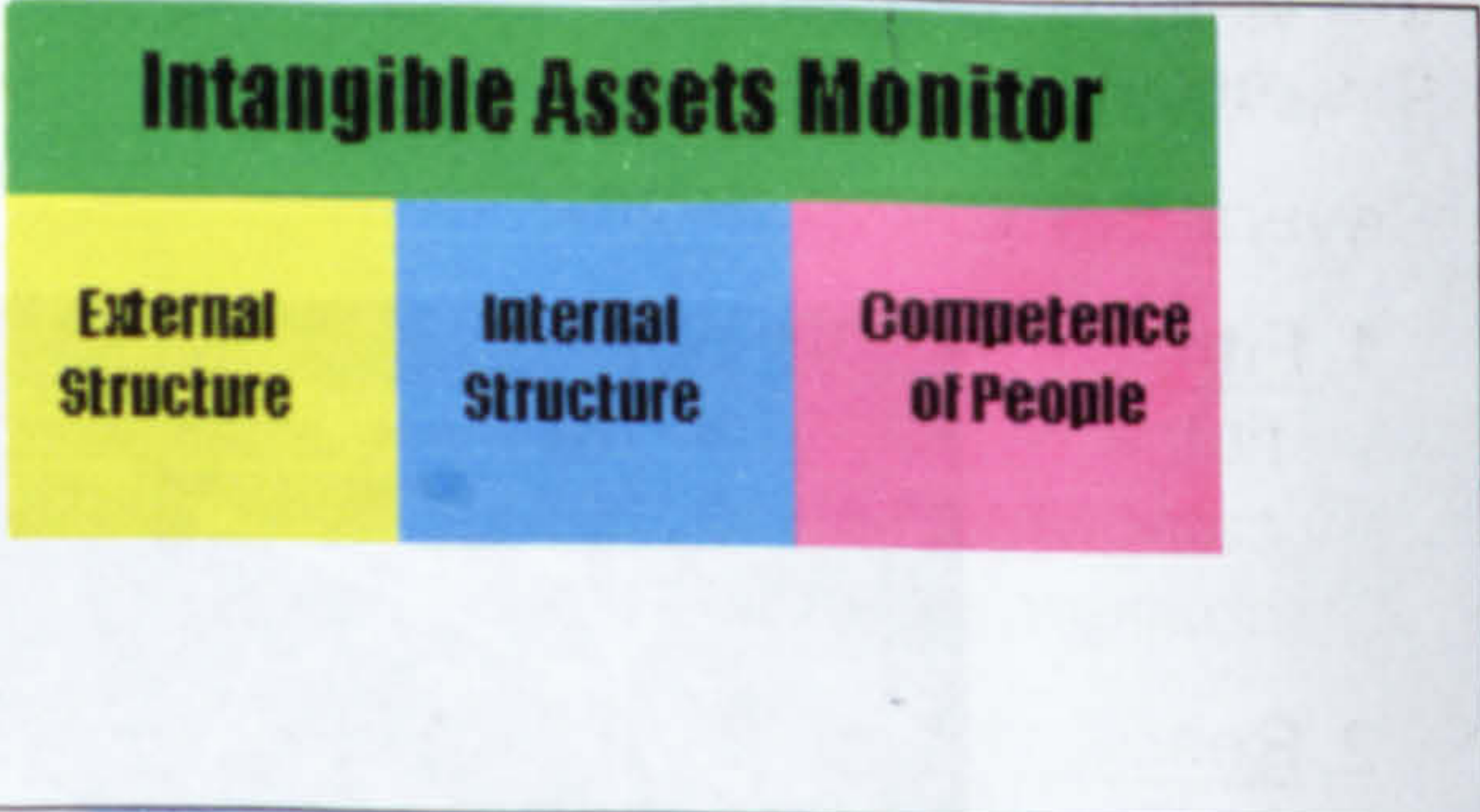

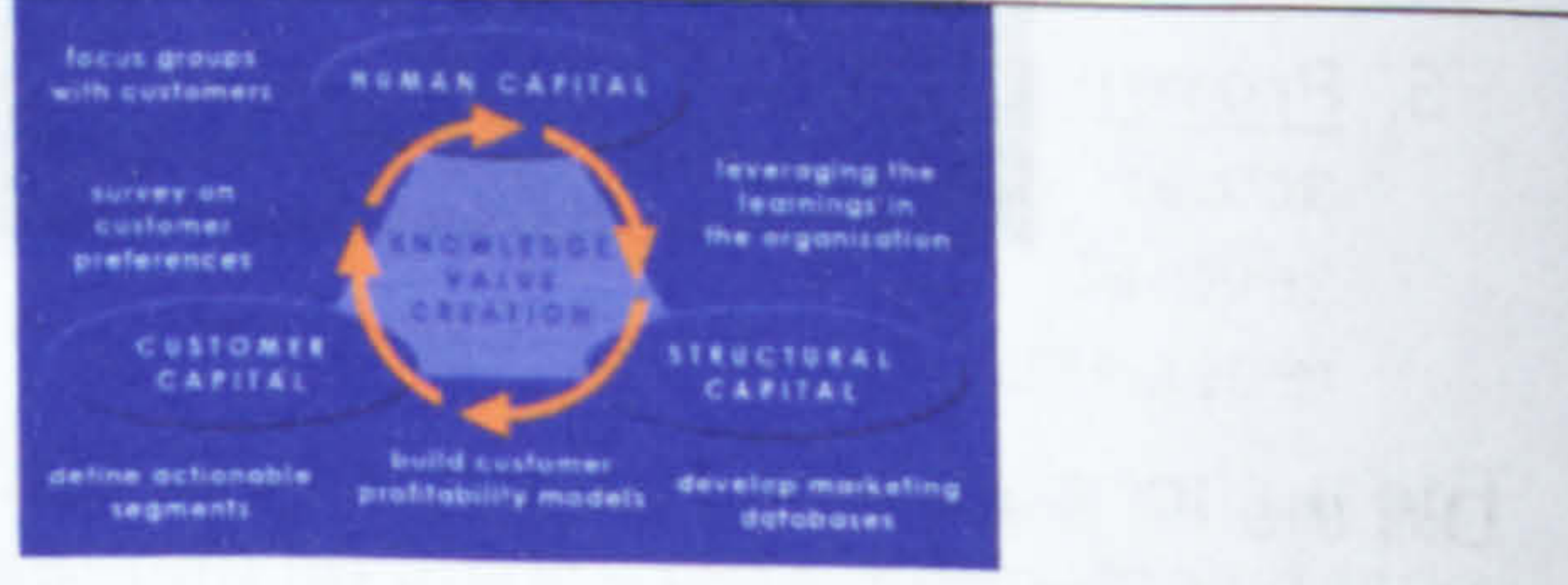
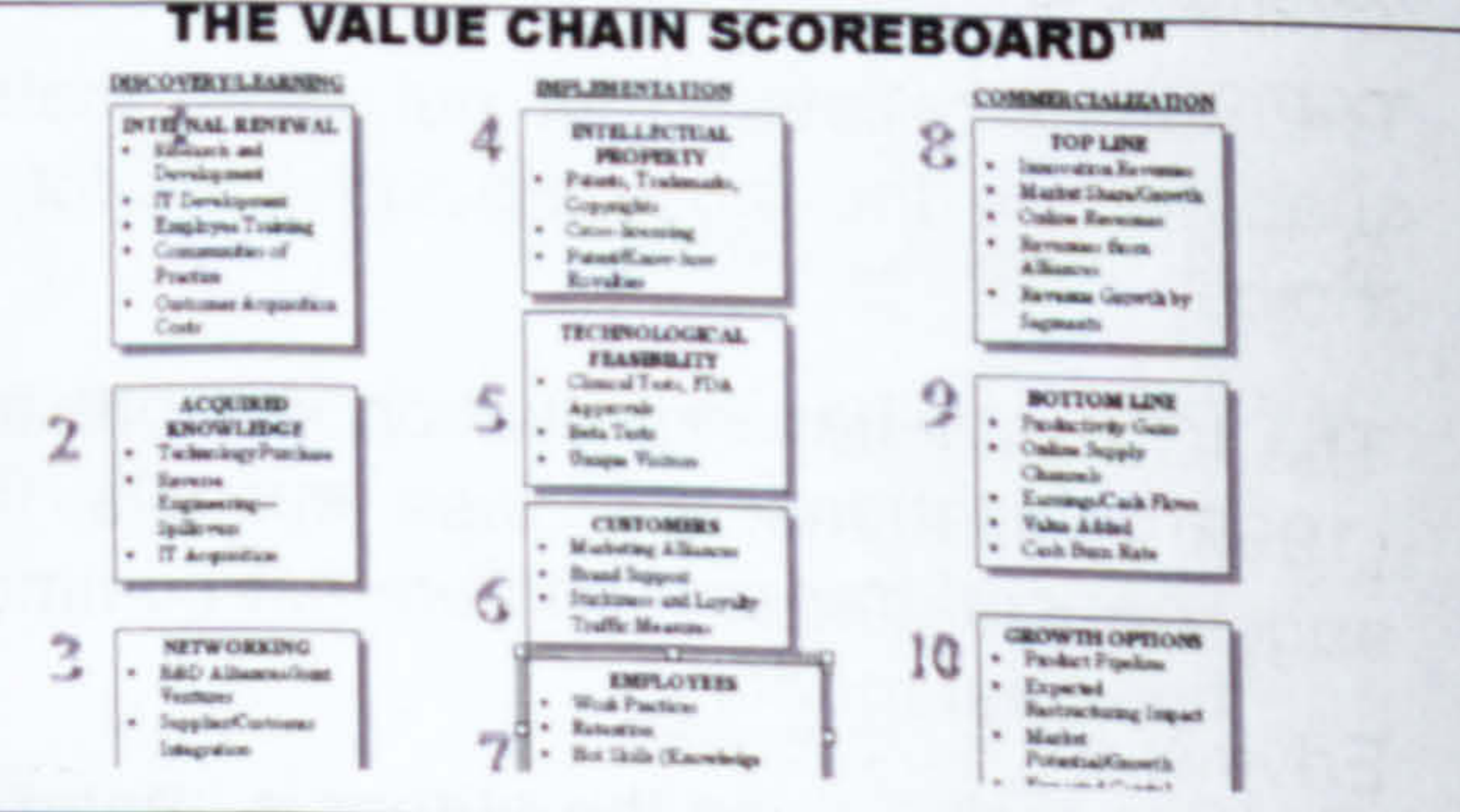
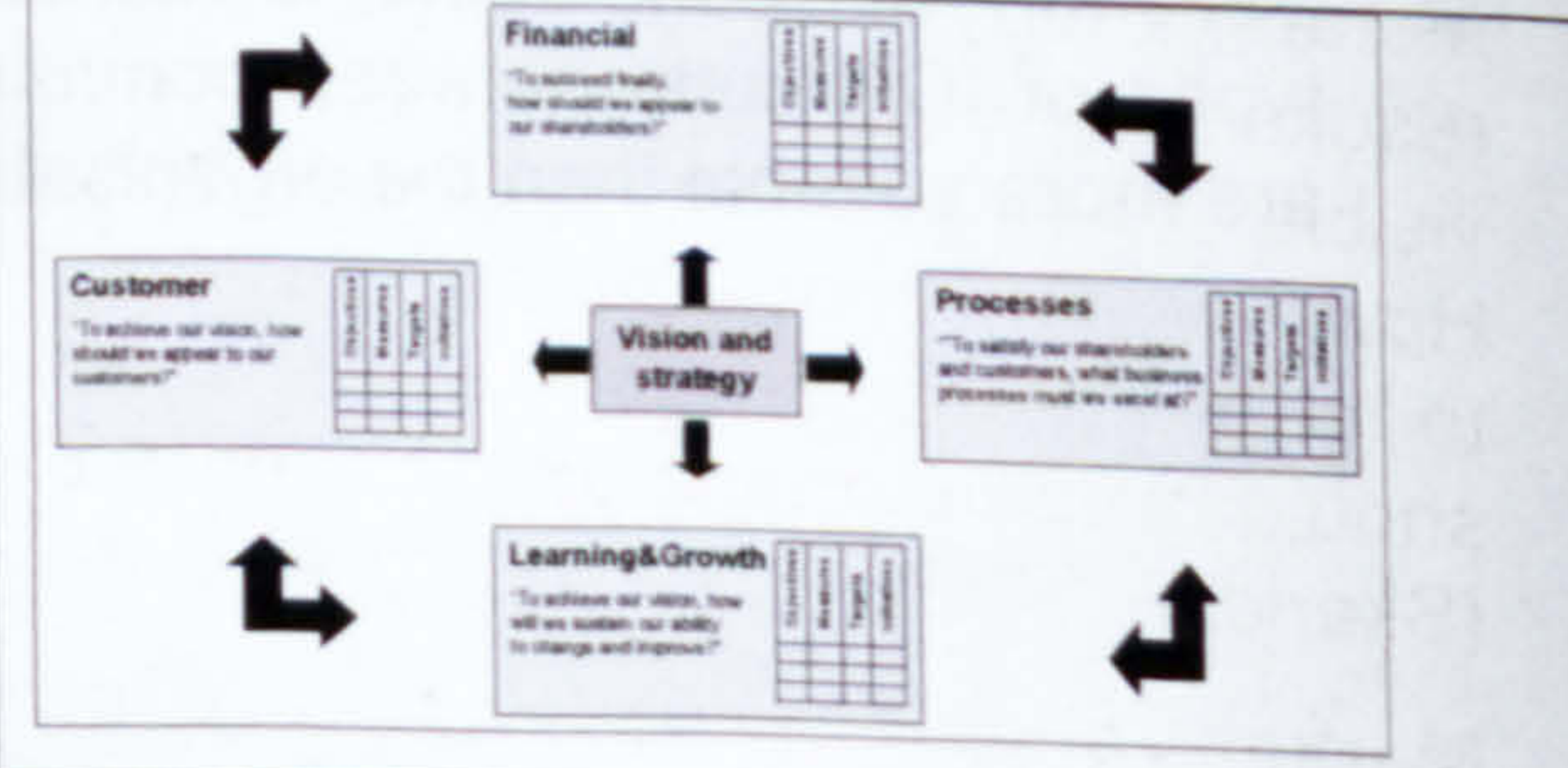
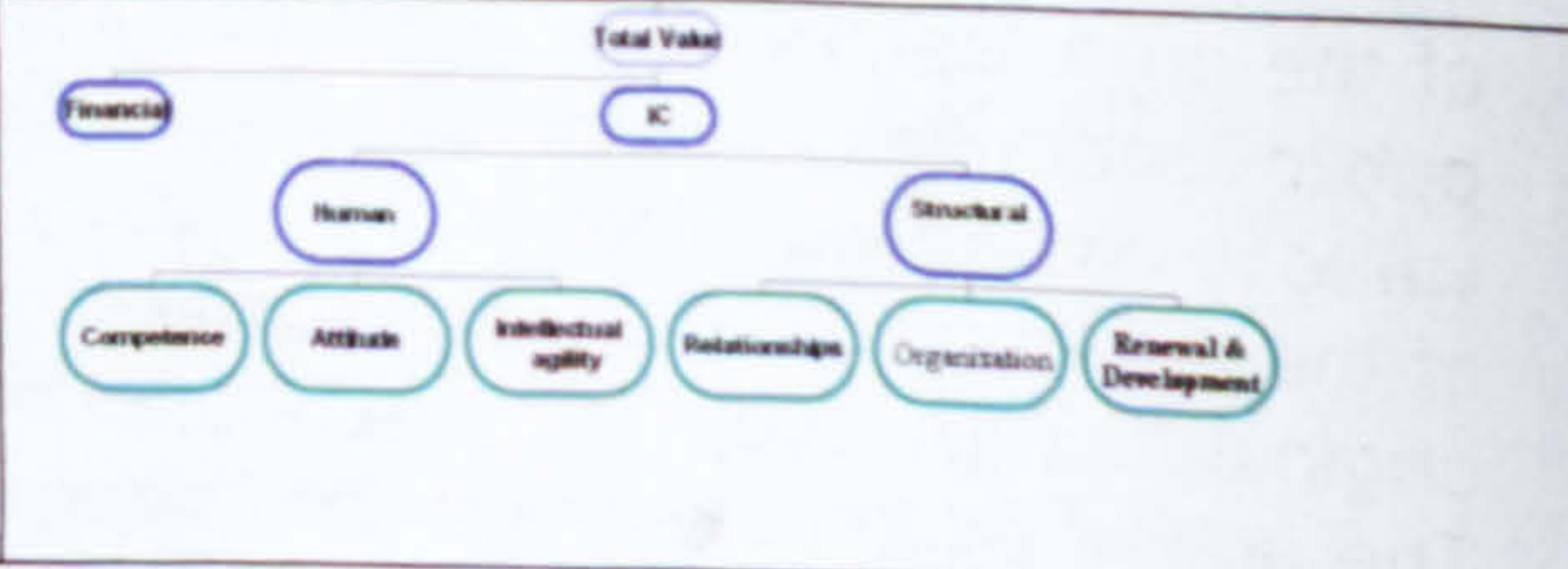
<p><b><u>Intangible assets monitor</u></b></p> <p>The intangible assets of the organisation are categorised as either external structure or knowledge capital. The external structure consists of brands and customer and supplier relationships. The knowledge capital is comprised of internal structure (organisation's management manual systems, attitudes, software etc) and people competence (including education and experience) (Sveiby, 1997)</p>	 <p>The diagram is titled 'Intangible Assets Monitor'. It features three colored boxes: a yellow box on the left labeled 'External Structure', a blue box in the middle labeled 'Internal Structure', and a pink box on the right labeled 'Competence of People'.</p>
<p><b><u>Skandia IC &amp; Navigator</u></b></p> <p>The model was developed by Leif Edvinsson in the early 1990's and was widely published as benchmark for publication of IC in organisations (Roos <i>et. al.</i>, 1998).</p>	 <p>The diagram is titled 'Skandia IC &amp; Navigator'. It shows a house-like structure. The roof is labeled 'Financial Focus'. The middle section has three boxes: 'Customer Focus' on the left, 'Human Focus' in the center, and 'Process Focus' on the right. The base is labeled 'Renewal and Development Focus'. The entire structure is set within an 'Operating environment'.</p>
<p><b><u>Knowledge Assets Framework</u></b></p> <p>The model developed by St. Onge shows that long-term profits are created at the confluence between human, structural, and customer capital (St. Onge, 2002)</p>	 <p>The diagram is titled 'Knowledge Assets Framework'. It shows a circular flow between three main components: 'HUMAN CAPITAL' at the top, 'STRUCTURAL CAPITAL' on the right, and 'CUSTOMER CAPITAL' on the left. In the center is a circle labeled 'KNOWLEDGE VALUE CREATION'. Arrows indicate a clockwise flow between these components. Surrounding the central circle are various activities: 'focus groups with customers', 'survey on customer preferences', 'define actionable segments', 'build customer profitability models', and 'develop marketing databases'.</p>
<p><b><u>The Value Chain</u></b></p> <p>The value chain model was developed by Prof. Baruch Lev from the accounting department of New York University. 10 categories of ICs are grouped into three stages of the organisational value chain: Discovery &amp; Learning, Implementation, and Commercialisation (Lev, 2002)</p>	 <p>The diagram is titled 'THE VALUE CHAIN SCOREBOARD™'. It shows 10 categories of ICs grouped into three stages:         <ul style="list-style-type: none"> <li><b>DISCOVERY &amp; LEARNING:</b> <ul style="list-style-type: none"> <li>1. INTERNAL RENEWAL: Research and Development, IT Development, Employee Training, Communication of Vision, Customer Acquisition Costs</li> <li>2. ACQUIRED KNOWLEDGE: Technology/Patents, Service Engineering/Support, IT Acquisition</li> <li>3. NETWORKING: R&amp;D Alliances/Joint Ventures, Supplier/Customer Integration</li> </ul> </li> <li><b>IMPLEMENTATION:</b> <ul style="list-style-type: none"> <li>4. INTELLECTUAL PROPERTY: Patents, Trademarks, Copyrights, Know-how, Patent/License/Joint Ventures</li> <li>5. TECHNOLOGICAL FEASIBILITY: Clinical Tests, Pilot Approvals, Beta Tests, Design/Prototypes</li> <li>6. CUSTOMERS: Marketing Alliances, Brand Support, Institutions and Lobby, Traffic Measures</li> <li>7. EMPLOYEES: Work Practices, Retention, Exit Costs (Knowledge)</li> </ul> </li> <li><b>COMMERCIALIZATION:</b> <ul style="list-style-type: none"> <li>8. TOP LINE: Innovation Revenue, Market Share/Growth, Online Revenue, Revenue from Alliances, Revenue Growth by Segments</li> <li>9. BOTTOM LINE: Productivity Gains, Online Supply Chains, Earnings/Cash Flow, Value Added, Cash Burn Rate</li> <li>10. GROWTH OPTIONS: Product Pipeline, Expected Rethinking Impact, Market Potential/Growth</li> </ul> </li> </ul> </p>
<p><b><u>The Balanced Scorecard</u></b></p> <p>A company's performance is measured by indicators covering four major focus perspectives: (1) financial perspective; (2) customer perspective; (3) internal process perspective; and (4) learning Kaplan and Norton, 1992)</p>	 <p>The diagram is titled 'The Balanced Scorecard'. It shows four perspectives arranged around a central 'Vision and Strategy' box:         <ul style="list-style-type: none"> <li><b>Financial:</b> 'To succeed financially, how should we appear to our shareholders?' (with a table for Objectives, Measures, Targets, Indicators)</li> <li><b>Customer:</b> 'To achieve our vision, how should we appear to our customers?' (with a table for Objectives, Measures, Targets, Indicators)</li> <li><b>Processes:</b> 'To satisfy our shareholders and customers, what business processes must we excel at?' (with a table for Objectives, Measures, Targets, Indicators)</li> <li><b>Learning &amp; Growth:</b> 'To achieve our vision, how will we sustain our ability to change and improve?' (with a table for Objectives, Measures, Targets, Indicators)</li> </ul>         Arrows indicate a clockwise flow from Learning &amp; Growth to Financial.     </p>
<p><b><u>The IC distinction tree</u></b></p> <p>According to this model, intellectual capital is constructed from Human Capital and Structural Capital (which is divided into relationships, organisation and renewal &amp; development capitals) (Roos <i>et. al.</i>, 1998)</p>	 <p>The diagram is titled 'The IC distinction tree'. It shows a hierarchy of Intellectual Capital:         <ul style="list-style-type: none"> <li><b>Financial</b> (top level)</li> <li><b>IC</b> (second level)</li> <li><b>Human</b> and <b>Structural</b> (third level, branching from IC)</li> <li><b>Competence</b> (under Human)</li> <li><b>Attitude</b> (under Human)</li> <li><b>Intellectual ability</b> (under Human)</li> <li><b>Relationships</b> (under Structural)</li> <li><b>Organisation</b> (under Structural)</li> <li><b>Renewal &amp; Development</b> (under Structural)</li> </ul> </p>

Table 6-1: Alternative IC models



### 6.5.3 Why the author chose the IC distinction tree

After exploring the models above, the author chose to use the IC distinction tree as the basis for the Professional Communities IC framework. A detailed description of this model is provided in the next section.

Several arguments supported this decision:

1. **Fitness of categories**: the structure of the tree and its categories seemed to fit the hypothesis the author is attempting to explore. For example, the three categories of “structural capital” fitted some of the early ideas on the challenges and strengths of the QM and KM communities.
2. **Resolution** – the IC Distinction tree is a detailed model constructed of 4 levels and more than 25 categories. This fitted the intention to assess the IC of professional communities using a bottom-up approach.
3. **Familiarity**: the model was presented in both QM and KM conferences in Israel, thus the author assumed that it would be familiar to some of the community members who were asked to use it for self assessment.
4. **Guidance**: the author has good access to some of the people who developed the IC model. This provided the opportunity to better understand the model and discuss possible modifications.
5. **Proven model**: the author does not have information on the number of actual implementations of the model. However, the author came across several successful implementations, which suggest that the model is reasonably robust.

Did the IC distinction tree framework fit for the designated purpose? The case studies chapters show how the (modified) model was applied successfully to the QM and KM communities.

### 6.5.4 The IC Distinction Tree

The IC distinction tree was developed by Roos and Edvinsson (1998). The Tree builds on earlier IC models e.g. the ones suggested by Sveiby (1996).

Edvinsson suggested that using the tree would serve as a metaphor for the wealth of organisations. The market value and results of the IC of the company (**“the fruits”**) are relatively visible for example through traditional financial reports. However, the **“roots”** of the tree, which represents the capacity to cultivate the organisations future growth are hidden but should become visible through mechanisms such as IC reports (Skandia, 1999).

**Market Value**: The top level of the model is the “market value” of the organisation (represented by share value, in the case of public commercial organisations, for example). The market value is composed of the financial value and Intellectual Capital of the organisation. It should be noted that the author takes the original IC Distinction Tree as a basis for the Professional Communities IC structure. The author added one major branch and several “root” (components) to this tree, so it would better suite the purpose. Those modifications are described in the next chapter describing the IC Mapping Methodology.



Figure 6-4: The IC Tree (Skandia, 1999)



The following chart shows the structure of the original tree as proposed by Roos *et al.* (1998), and the table presents the components of the tree:

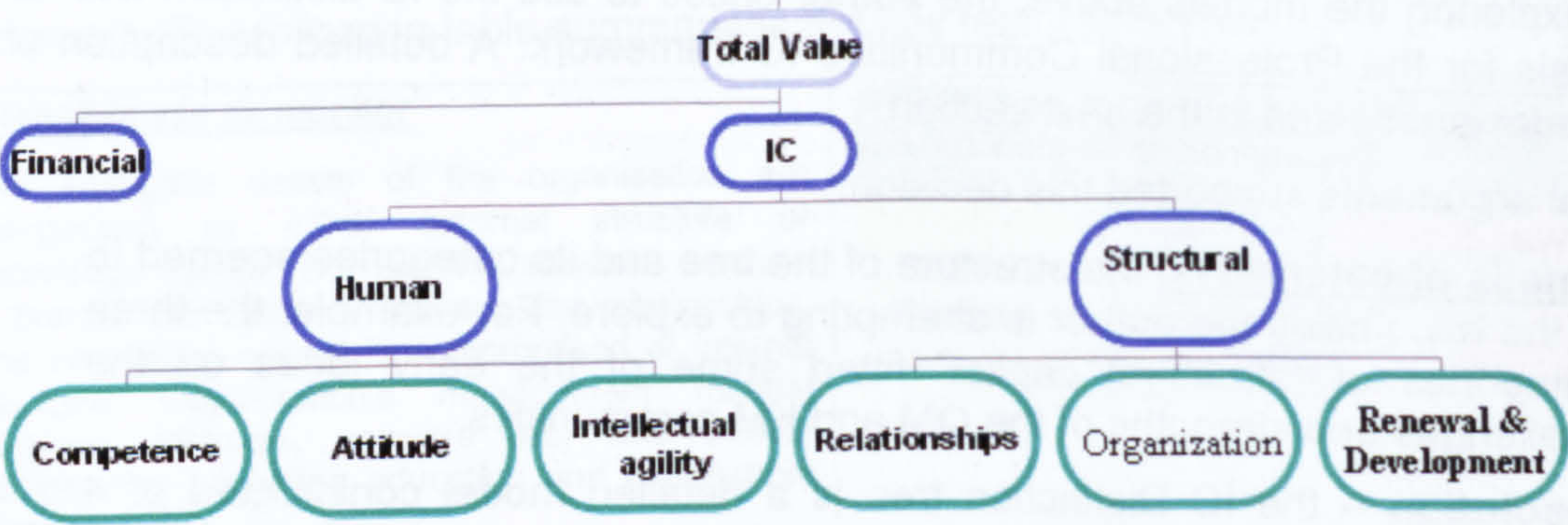


Figure 6-5: The structure of the original IC tree

Human Capital	The soul of the company: the accumulated value of investments in employee training, competence, and future. The term focuses on the value of what the individual can produce; human capital thus encompasses individual value in an economic sense. Can be described as the employees' competence, relationship ability and values.
Competence	Encompasses knowledge, will and skill, including professional, social and commercial ability.
Knowledge	The ability people have to use information to solve complex problems and adapt to change. The individuals' ability to master the unknown.
Skills	Know-how
Experience	The wealth of experience accumulated by the individuals.
Attitude	The value generated by the "correct" Behaviour of the individuals
Motivation	The constructive energy and the will of power and internal drive to reach goals, triumphing over seemingly insurmountable odds. Falling, learning from mistakes and getting up afterwards.
Behaviour	Value of the Behaviour of the individual in the workplace, e.g. enthusiasm, altruism, honesty etc.
Conduct	The value of the, judged from the <b>ethical</b> perspective of the society
Intellectual agility	The wits: the ability to apply knowledge in very different situations, and transform ideas into value.
Innovation	The capacity to create a new idea or way. There are two sorts of innovation: one in the form of improving already existing products or services and the other in the form of creating totally new products and services.
Imitation	The ability to look around, perceive innovation in other places, and apply it to one's own situation
Adaptation	The ability to apply existing solutions in new context
Packaging	The ability to turn ideas into a concrete product or service
Structural Capital	What remains in the company, when the human capital, the employees, has gone home. This is owned by the organisation as a whole, and can be reproduced and shared. It serves as a vehicle to turn the human capital of the organisation into value.
Organisation	Internal efficiency: Systematised and packaged knowledge, plus systems for leveraging the company's innovative strength and value-creating organisational capability



Processes	Process: A carefully considered, precisely controlled and constantly improved sequence of steps or operations leading to a predetermined result
Organisational culture	The combined sum of the individual opinions, shared mindsets, values and norms
Infrastructure	The ability of the organisational infrastructure (including technological system) to support and enhance the value adding processes
<b>Renewal &amp; Development</b>	A group of indicators and ratios describing the change and renewal capability to turn the future into an asset.
New product development	The ability to (effectively) create new products or services
Reengineering	A radical redesign of business processes to achieve improved results.
Learning and improvement	A learning organisation is one that enables frequent knowledge interaction and capitalises on new knowledge created in these interactions.
<b>Relationships</b>	<b>The external actors: the ability to conduct fruitful relationships with the external world</b>
Customers	The value of customer base, customer relationships and customer potential. Current and potential business relationships with previous and present customers.
Suppliers	The value of the supplier base and effective relationships with them, the ability to work with them as an integral part of the organisation.
Alliance partners	The value of the relationship with business partners, joint ventures partners etc., and ability to create value together.
Shareholders	The value of the relationships with the organisation's shareholders. The ability to work with them to increase market value
Other stakeholders	The ability to contribute to the community in which the organisation operates, while extracting value for this.

Table 6-2: The components of the IC Distinction Tree

6.5.5 New roots

A rough examination of each root of the original IC Distinction Tree shows that all its components are applicable to the case of professional communities. This estimation is validated in the next part of this thesis.

However, the author thinks that some important roots are missing. The author's experience as well as literature review on the situation of QM and KM surfaced ideas for several additional leaves that might be relevant to Professional Communities.

In the validation phase the applicability of these new roots will be tested. For now, they are just presented:

IC Category	Suggested new root	Description
Relationships	External Requirement Capital	The author's experience with ISO9000, led to the thought that a pressure from external entity to apply a certain discipline may enhance the capability of the professional community which "owns" this discipline to implement it. <sup>7</sup>

<sup>7</sup> However, the opposite can also be claimed: that such external pressure can be counter-productive and lead to implementation for the wrong reasons that yield poor results.



Organisation	Internal Relationships	The author decided to distinguish between relationships with external entities (i.e. external to the organisation in which the community operates, such as external customers, classified under "relationships") and the relationships with internal entities e.g. the internal customers of the professional community.
Organisation	Organisational Memory Capital. Information Capital	The Organisational Memory can be an important asset to a community – to help it avoiding the re-invention the wheel phenomena and learning for its past success and failures <sup>8</sup> .  A similar logic applies also to information capital, which may an important intangible asset if used effectively by the professional community.
Renewal and Development	Challenge Capital	The author thinks that when the challenge which is addressed by a community is significant, demanding and relevant, it can enhance the capability of the community to make a difference, due to intrinsic and extrinsic factors. As an example, the author thinks that this is one of the major intangible assets of some nations (such as China today or Japan in the 50's and 60's). The author is interested in examining whether this is also applicable to professional communities.

Table 6-3: New IC roots

## 6.6 Construct 4: flows and exchanges of IC

Sveiby (2000) has criticised the IC theory for focusing too much on the static properties of knowledge. Most theoreticians of ICs understand today that IC is not only about static "assets" which should be accumulated in some IC organisational stores. For example: *"Intellectual capital embraces not only what is known, or stocks, but also the processes of knowing, or flows... How are intellectual capital stocks leveraged into value through dynamic intellectual capital flows? This is probably the most urgent question in knowledge management/intellectual capital research and business practice today"* (O'Regan and O'Donnell, 2000). This view is shared with others, such as Johnson: *"The flow and interactions of these (Intangibles) assets are probably more important in the creation of real wealth of the firm"*. (Johnson, 1999)

The author needs to differentiate at this point between internal flows and external flows.

### 6.6.1 Internal flows

Internal flows of IC within a specific organisation are referred to as transformation of specific types of ICs into others, and the transformation of ICs into financial capitals and vice versa. (Roos *et. al.*, 1998). The ICs flows, according to Roos, are described in the following figure.

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<sup>8</sup> However, the opposite argument is also logical: organisational memory which is not accompanied with the ability to "unlearn" can block renewal. Alvin Toffler (1970) claimed in 'Future Shock' (1970): *'The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn.'*



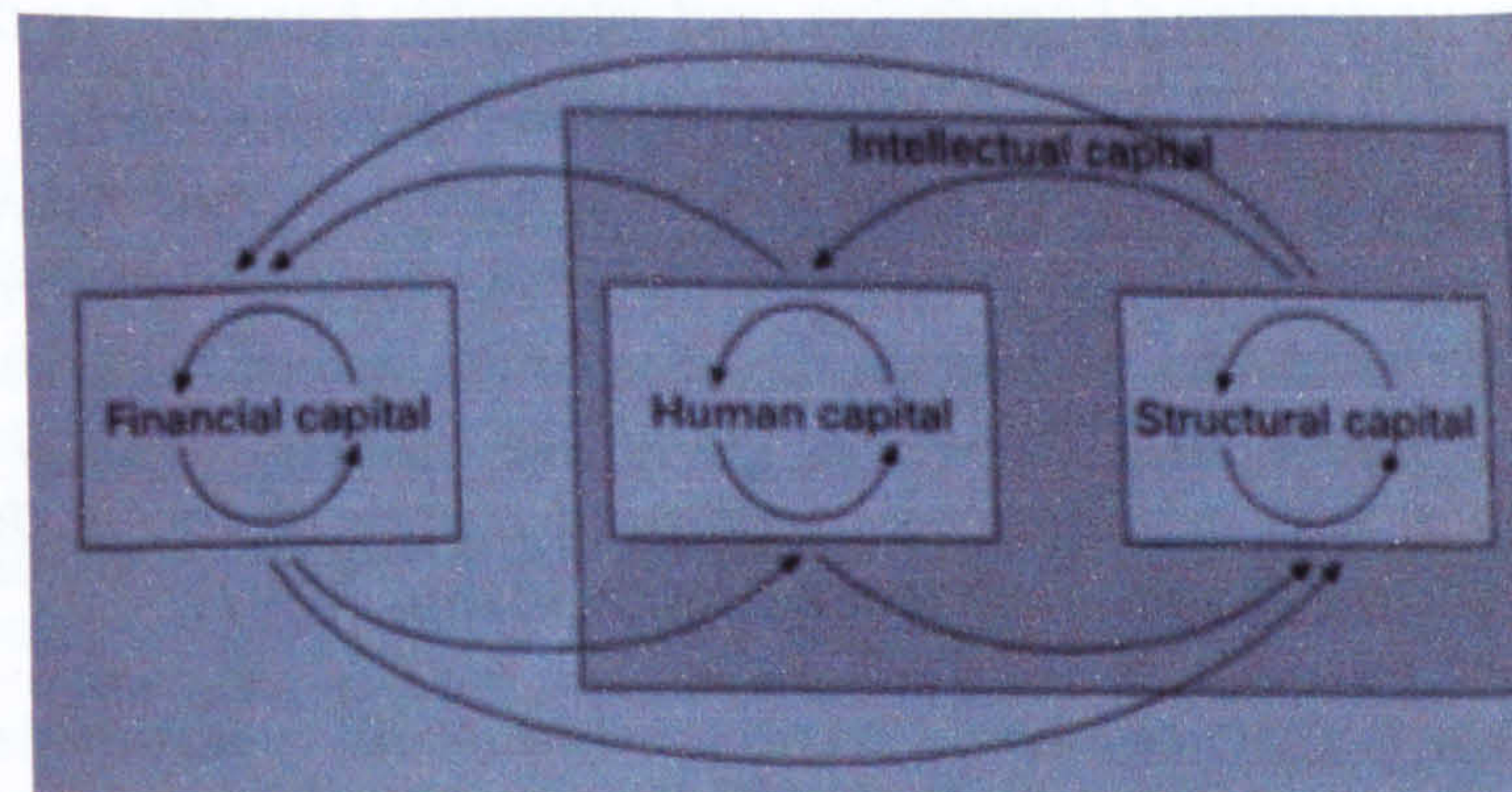


Figure 6-6: Flows of ICs (Roos et. al., 1998)

For example, here is a description of one of these flows, the transformation of human capital into structural capital: *“... the systematic transformation of human capital into structural capital as a multiplier, with much more sustainable earnings potential for the organisation. It is a refined approach based on the second phase, but very much focused on the packaging of knowledge into recipes to be shared globally and rapidly”* (Edvinsson, 2000).

Another researcher takes the flows concept one step further and suggests mapping the exact nature of each flow. In his suggested map, “Ideas capital” creates “Innovation Capital” which aids “process capital”. (Johnson, 1999)

### 6.6.2 External flows and exchanges

**External flows** of Intellectual Capital, i.e. the flows of intangible assets between different organisations, are less covered in the literature. Allee (2000) criticises the focus on internal IC flows, and adds that even when external focus exists, it is usually not beyond the traditional “customer focus”. *“Most common intellectual capital frameworks still operate within a traditional view of the enterprise that limits the type of business and economic analysis”* (Allee, 2000).

An example for the importance of external flows is the case of mergers and acquisitions: *“One illustration of this is the recent merger between AOL and Time Warner, combining different organisational capital components with complementary customer capital potentials”* (Edvinsson, 2000).

The word “potentials” used above by Edvinsson invokes metaphors of flows from places of high potential to places of low potentials: electrical current, and the natural flow of water. Similarly, the author will suggest later in the thesis to look at flows of specific ICs from a community that has rich “stores” of this specific asset to a community that is weaker in this area.

However, there is a clear difference – while in the physical world such flow reduces the potential of the contributing end, in the world of intangibles this is not necessarily the case. According to an old Chinese saying, knowledge is one of the few assets that multiplies as it is shared (Högberg and Edvinsson, 1998)

**External exchanges:** throughout the thesis, the author uses the terms “flows” and “exchange” of ICs together as a way to better communicate the ideas of IC interactions between organisations (and professional communities in particular). While the term “flows” communicates the idea of the movement of intangible assets from high potential to a lower one, the term “exchange” implies that there should be some synergetic relationships, where each side acts on both the contributing and receiving ends.

Allee (2000), one of the theoreticians of the IC fields, is one of the few researchers who referred to the exchange of ICs. *“An expanded view of value allows us to begin*



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*redefining value to understand knowledge and intangible benefits as currency in their own right and attend to more types of value exchange”(Allee, 2000).*

A research conducted at Oxford University about Social Capital identified the need for IC exchange and combination as a critical element in IC creation. *“Where resources are held by different parties, exchange is a pre-requisite for resource combination. Since Intellectual Capital is generally created through a process of combining knowledge and experiences of different parties, it too is dependent upon exchange between these parties”(Nahapiet and Goshal, 1997)*

### 6.6.3 The author's choice

The author is focusing attention on exchanges of IC between professional communities, rather than exploring the internal flows within each community.

This does not imply that internal flows within a professional community are not important. On the contrary – from the author's experience, there is a large space for improvement in the area. Therefore, the author thinks that research into the ICs of QM and KM should look into internal flows. However, in the current research, due to the practical need to limit focus, the author does not investigate this issue.

### 6.6.4 Conditions for IC exchanges

The Oxford research mentioned above has identified four conditions that must be satisfied, in order to enable the actual exchange of Social ICs (Nahapiet and Goshal, 1997). The author thinks that this suggestion can cover all types of IC (including those that constitute the selected IC model, i.e. human capital and organisational capital). The four conditions are:

1. **Opportunity exists** – the parties must have access to the ICs to be exchanged, for example to knowledge. Such opportunities can be planned (e.g. via virtual KM systems or professional conferences) or occur through accidental interactions. Network ties are particularly important in increasing exchange opportunities.
2. **Value is expected** – in order for an exchange to take place, the parties must expect that it will create value and prove worthwhile. This is exemplified by a comment made by a participant of a professional conference: *“Each of us expects to learn something of value as a result of our being here. None of us knows exactly what we are going to learn or what path we will take in the pursuit of this knowledge”.* (Nahapiet and Goshal, 1997).
3. **Motivation is crucial** – Even where the opportunities for exchange exist and people anticipate the value they will be able to appropriate or realise some of the value created by their engagement. The active debate in the KM literature around the need for incentives for knowledge sharing, for example, is related to the need to motivate people to actively share knowledge (which is a form of IC exchange) (Davenport, 1995).
4. **Combination capability** – the research claims the previous three conditions are not enough – the capability to “combine” the exchanged IC (i.e. recognise the value of it, learn it, assimilate it, embed it in own operation and use it) is the fourth condition. This ability is dependent on the existence of related prior knowledge.

Allee (2000) adds a fifth condition as a critical factor in ICs exchange.

5. **Fairness** - *“In this more dynamic view the value chain model of the enterprise is superseded by the idea of a value network operating on the principle of fair exchange of not just goods, services and revenue, but also knowledge and intangible benefits”* (Allee,1999).



According to Nahapiet and Goshal (1997) the conditions for IC exchange can be viewed from three perspectives or dimensions:

- **The structural dimension** (network ties, network configuration and appropriate organisation)
- **The cognitive dimension** (shared codes and language, shared narratives)
- **The relational dimension** (trust, norms, obligations, and identification).

These perspectives are presented in the following illustration.

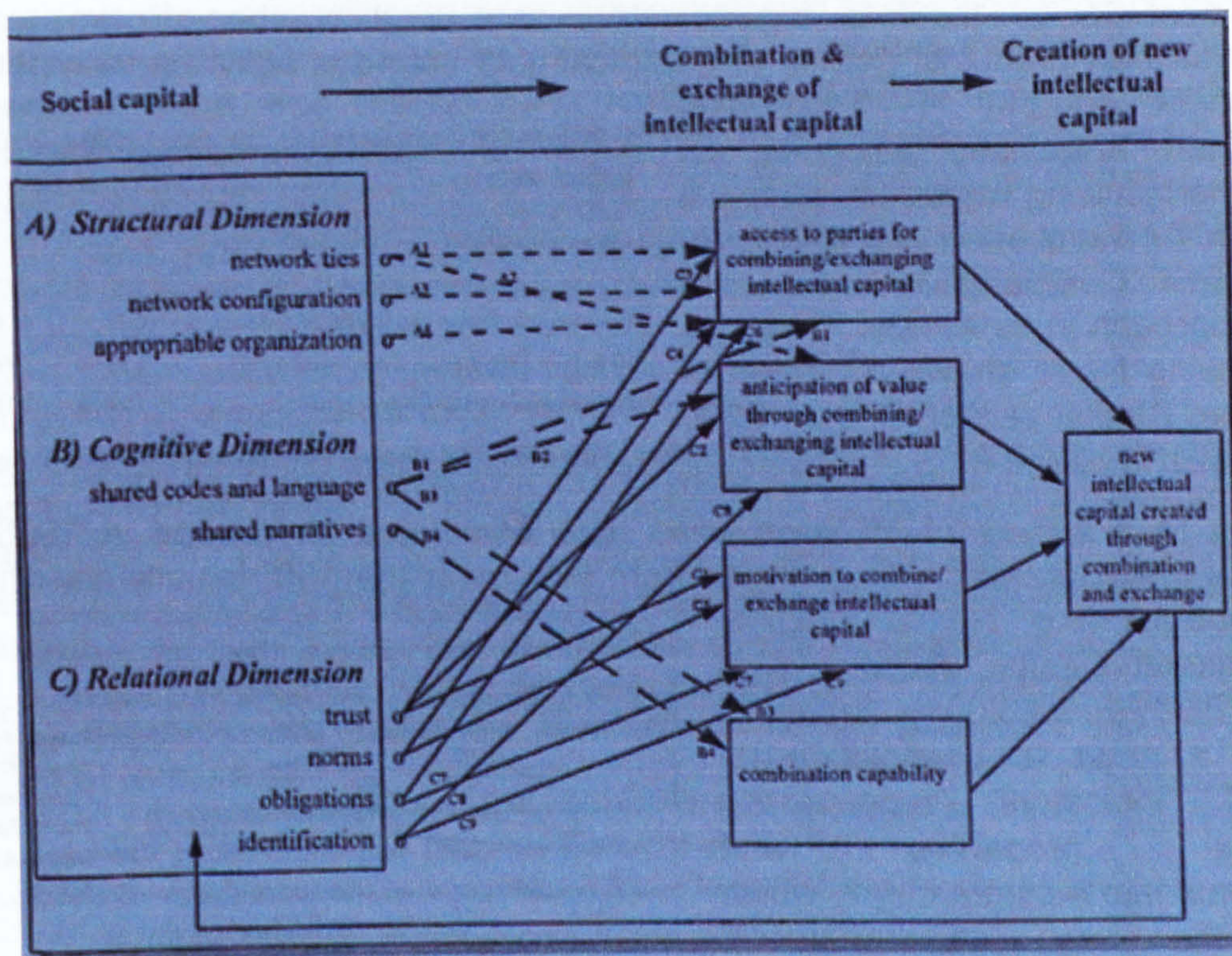


Figure 6-7: The conditions for IC exchange (Nahapiet and Goshal, 1997)

The author believes that the proposed set of conditions is relevant to the case of IC exchanges between professional communities. However, the author would like to emphasise one sub-condition to the “motivation” factor:

**Sub-Condition: A sense of urgency** – the author believes that perceived value is included in the “nice to have” actions category, which are hardly realised. On the other hand, a strong sense of urgency linked to the need of a community to survive or retain its relevancy, contributes to the probability that value adding IC exchanges may take place.

## 6.7 Construct 5: Measurement of IC

The “IC model” construct (construct 3) focused on the structure of the model of IC – which specifics which IC assets are included, and how they are organised in a logical framework. Once the author chose this model, the next question was “How to measure each asset represented in the selected model”. The challenge is that “Intellectual capital, by its nature, is inherently difficult to quantify” (Neely, 2000)

The literature survey revealed two measurement categories:



- Use of quantifiable indicators
- Subjective assessment of IC assets

### 6.7.1 Quantifiable indicators

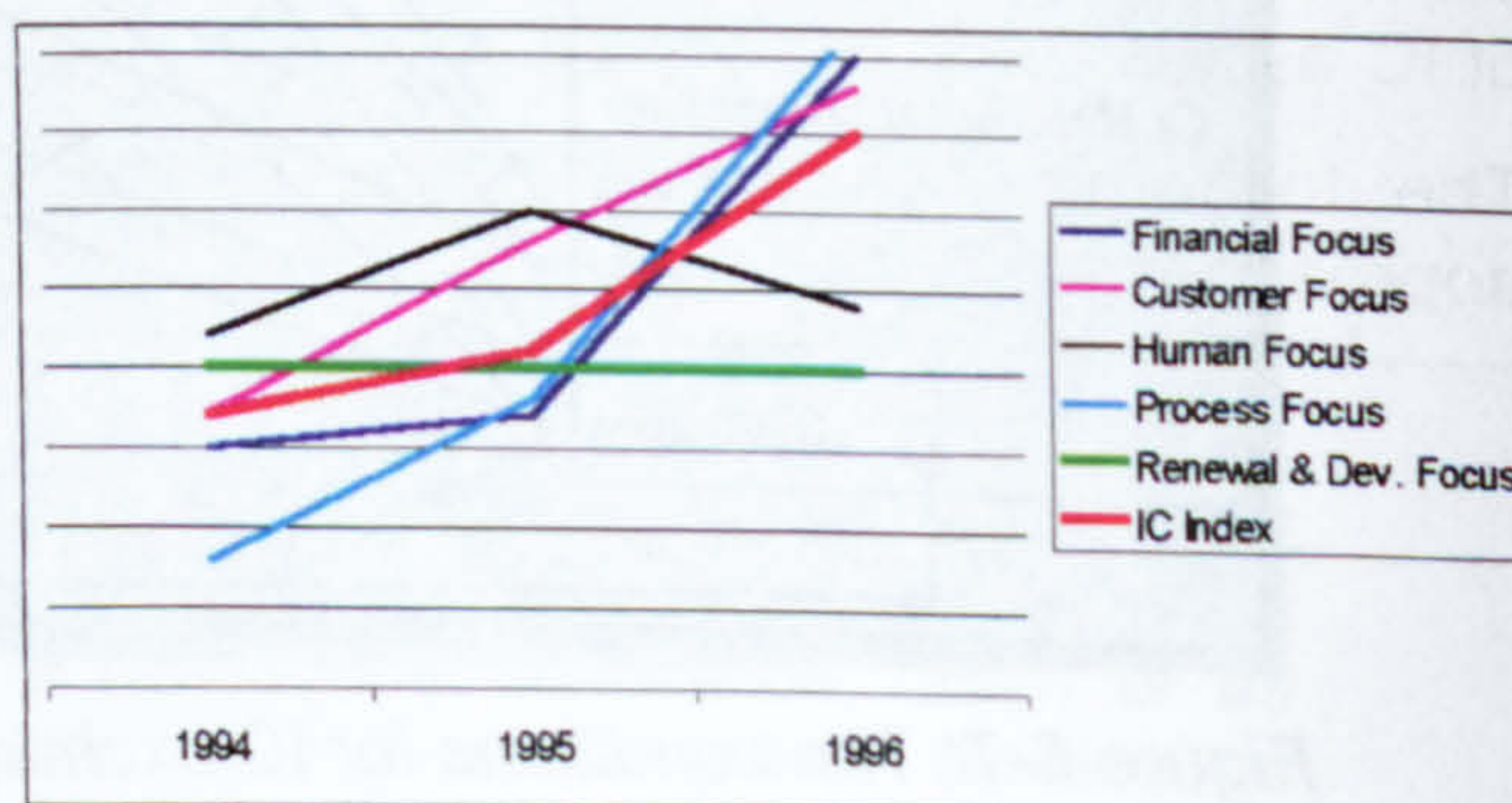
Most researchers and practitioners in the IC area support and use this approach (Stewart, 1998; Hudson, 1993; Johnson, 1999 and Sveiby, 1997)

For example, Edvinsson and Malone (1997) listed in their book a list of 168 potential indicators covering all areas of the Skandia Navigator model<sup>9</sup>.

In a particular case of the application of Skandia Navigator to one of its subsidiaries (SkandiaLink), about 25 indicators were used. For example, for Renewal and Development Capital, the following indicators were used: number of new products; premium for new products, portion of graphical user interface activities, number of IT development hours, IT expense/administrative expenses (Roos *et. al.*, 1998). The following illustration shows a section in SkandiaLink 1997 IC report. The Swedish Company Celemi uses a similar approach in its annual IC report. The following figure shows a portion of the Human Capital section of their 2000 report, which is based on Sveiby's Intangible Assets Monitor (Barchan, 2001).

Our People (Competence)	2000	1999	1998
(overall rating year)	■	■	■
Growth/Renewal			
Average Professional Experience, Years (3, 9)	10.1 ■	9.2 ■	8.3 ■
Competence Enhancing Customers (4, 5)	44% ■	27% ■	59% ■
Growth in Professional Competence (11)	18% ■	38% ■	8% ■
Experts with Tertiary Degree (6, 8)	75% ■	80% ■	67% ■

According to a survey of 16 companies who completed IC reports in 1998, the number of indicators per report ranged from 6 to more than 50, usually classified to few categories (e.g. Human Capital, Organisational Capital, Relationships Capital) (Bukh *et. al.*, 2001). Therefore there is a need to consolidate all individual indicators representing intellectual properties and components into a single index, which provides the overall picture of the IC of an organisation. One solution is the IC-Index, which aggregates all indicators of each IC category and of the overall IC of the organisation (Roos *et. al.*, 1998).



### 6.7.2 Subjective indicators and self-assessment

The alternative approach to basing the IC report on quantifiable indicators is to use non-quantitative assessment techniques. In this approach, the assessor assesses the situation of each asset type, using subjective scales such as poor – excellent, 1-4, etc. In some cases, they are supported by a list of guiding questions

As the author already said, this approach is applied only in a minor part of the IC world. Here are some examples:

<sup>9</sup> An anecdote: Edvinsson, one of the authors, once told the story of a young manager who approached him in the coffee break of an IC conference, and proudly told him that he just completed an IC report for his company, using all 168 indicators. Of course this was not the intention of the authors – the list was suggested as a source of ideas, out of which a reasonable number of relevant and applicable metrics can be selected.




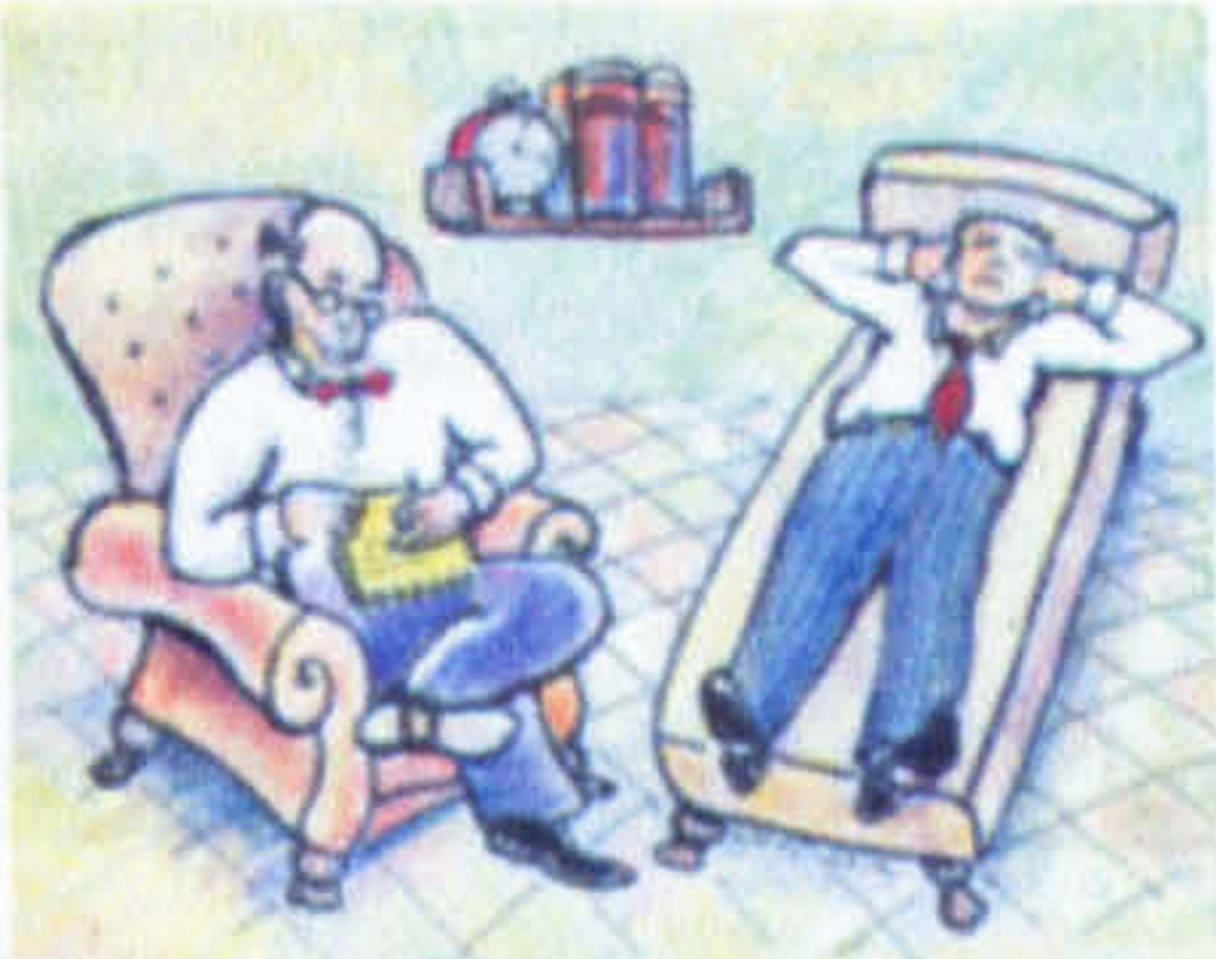
**Quality Awards:** some IC researchers refer to the models of established quality award such as the European EFQM and the American Baldrige as Intellectual Capital frameworks (Svieby, 2000; Bornemann *et. al.*, 1999). The assessment of the organisational excellence is done by assessing and scoring 40-50 criteria categorised into 7-8 categories (e.g. Leadership, Customer focus, Human Resource Focus, Process Management) (Baldrige, 1998). Assessment is done in 2 steps:

- ☐ Self-assessment by relevant people from the organisation. This is the basis for the self-assessment report submitted as part of the application procedure.
- ☐ External assessment by external evaluators – which is the main part of the judgement process.

Aggregation is done according to the weights assigned to each criterion by the Award board. The weights are updated every 2-3 years according to changing perceived importance of them. For scoring each criterion, a 0-100% scale is used, and a detailed table provides guidelines to the internal and external evaluators for scoring. (0% - *no systematic approach is evident*, 10-20% - *a beginning of a systematic approach to the basic requirements of the item, information is anecdotal*, 90-100% - *an effective systematic approach, fully responsive to all of the requirements of the item etc.*, (Baldrige, 1998)

**IC Benchmarking:** A group of Catalonian researchers developed a comprehensive methodology to benchmark intellectual capital of the organisation against its best-in-class competitors. The objective is to identify strategic IC gaps, in order to direct competitiveness improvement efforts. The methodology is based on self-assessment of IC assets.

The following table summarises the major strengths and weaknesses of each approach.

	Quantitative	Qualitative
		
Strengths	<ul style="list-style-type: none"> <li>○ Repetitive process</li> <li>○ Accurate – results more reliable and possibly less arguable</li> <li>○ Comparable results</li> <li>○ Both QM and KM people are familiar with this approach</li> </ul>	<ul style="list-style-type: none"> <li>○ Fast and inexpensive process</li> <li>○ Can yield more meaningful results for complex and vague criteria, which requires deeper judgement. Uses the <u>knowledge</u> of the assessors, not only raw <u>data</u>.</li> <li>○ Both QM and KM people are familiar with this approach</li> </ul>
Weaknesses	<ul style="list-style-type: none"> <li>○ Expansive data collection</li> <li>○ Lengthy data collection</li> <li>○ Data not always available</li> <li>○ Reflects the past (the period covered by the last set of available data)</li> <li>○ Suffers from all disadvantages of statistics which might hide the reality behind the numbers</li> </ul>	<ul style="list-style-type: none"> <li>○ Subjective, possibly biased by personal opinions and agenda</li> <li>○ Provides rough picture</li> <li>○ Less repetitive – different people may interpret differently a certain situation.</li> </ul>



Popularity	This approach is relatively popular in IC reporting	This approach is less used in IC reporting
------------	-----------------------------------------------------	--------------------------------------------

Table 6-4: comparison of assessment approach

The author’s choice

Considering the above comparison, and considering the purpose of the assessment in the thesis, the author decided to choose the qualitative/self assessment approach.

6.8 Construct 6: Visualisation of IC

Visualisation of ICs is the process of making the intangible clearly visible to all stakeholders.

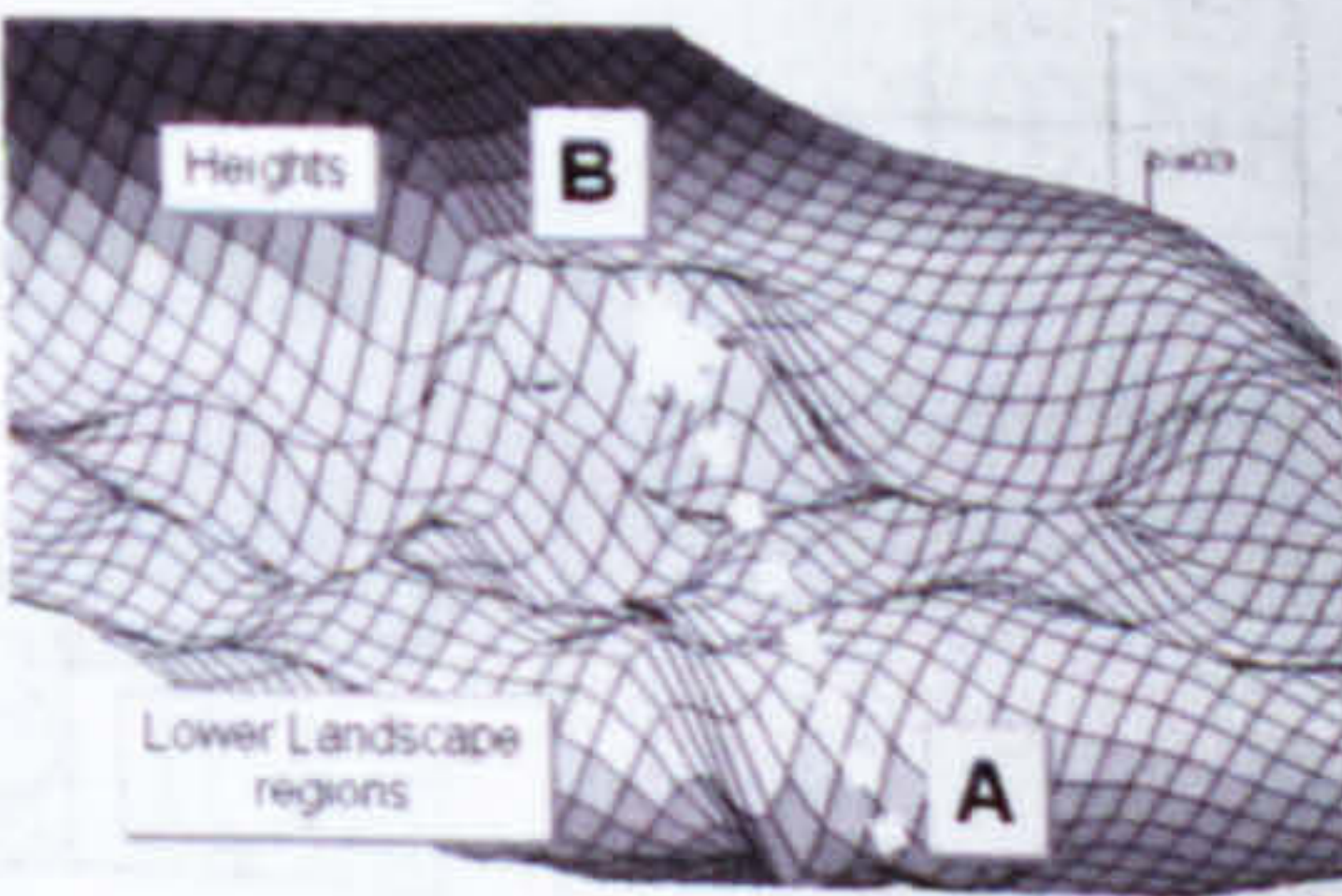
Edvinsson (2000) advocates the urgency of visualising ICs as the first stage out of four in its management. Effective visualisation supports the other phases: injection of human capital, transformation of human capital into structural capital and injection of structural capital externally (Edvinsson, 2000).

For the purpose of this thesis, the author will focus on one particular category of visualisation: the presentation of the “situation” of the IC of the organisation, as measured or assessed by one of the methods presented in the previous section. The purpose of scanning the available alternative visualisation techniques in the literature was to help design a method for this research. The visualisation technique the author designed is described in Chapter 7 (IC Mapping Methodology). It draws on ideas taken from the methods discussed in the literature.

The author found in the literature multiple ways to visualise the IC situation. Here the author presents just a selection of several techniques – each representing a different approach.

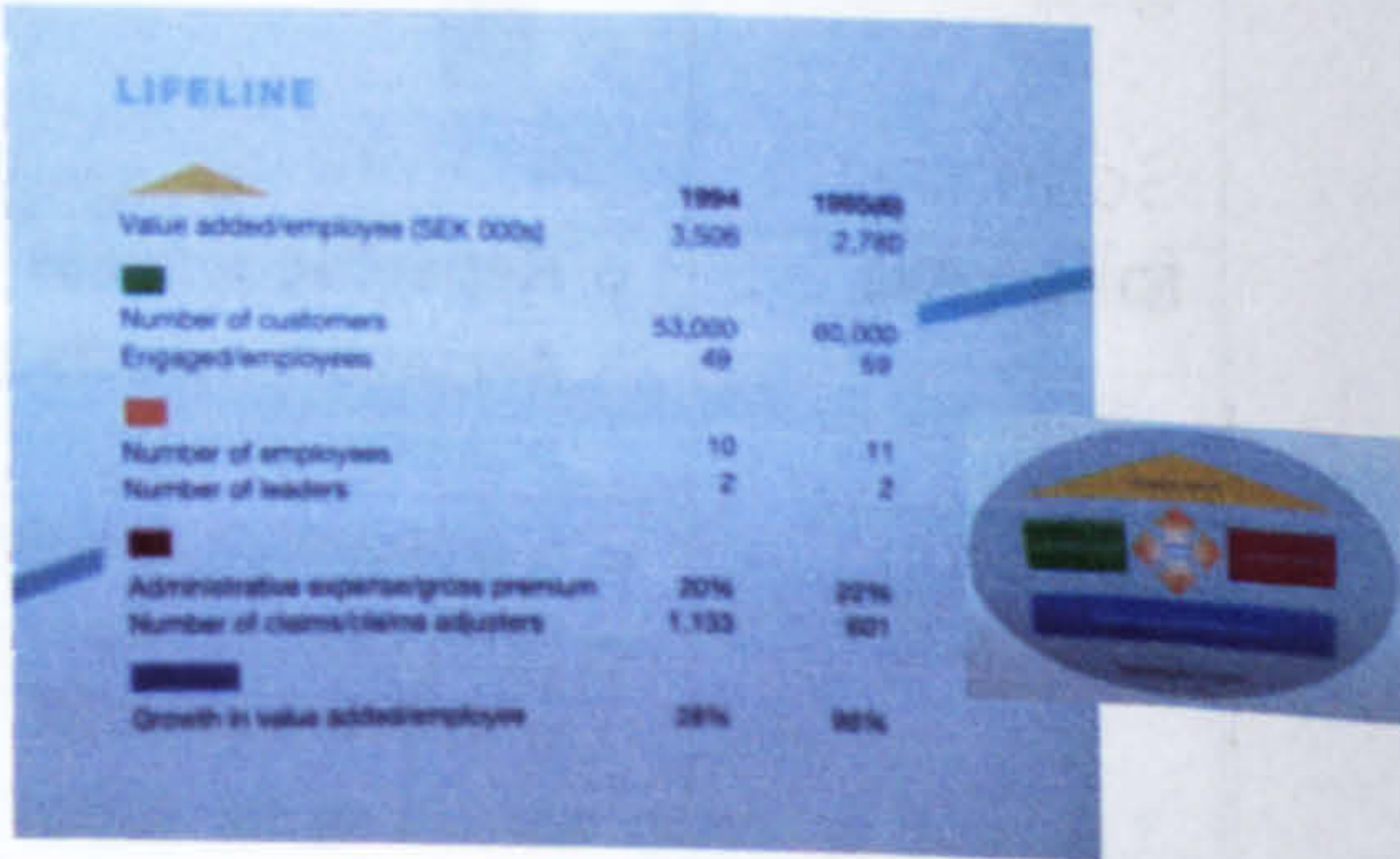
First Approach: A 3-D model - The digital IC landscape

The objective of the designers of this method was to “reduce the high dimensionality of the ‘IC differentiating components’ into a 3-Dimensional representation”. The map provides a snapshot into the IC critical areas and dynamics of an organisation (and its units) based on 20-64 IC metrics (Edvinsson et. al., 2000).



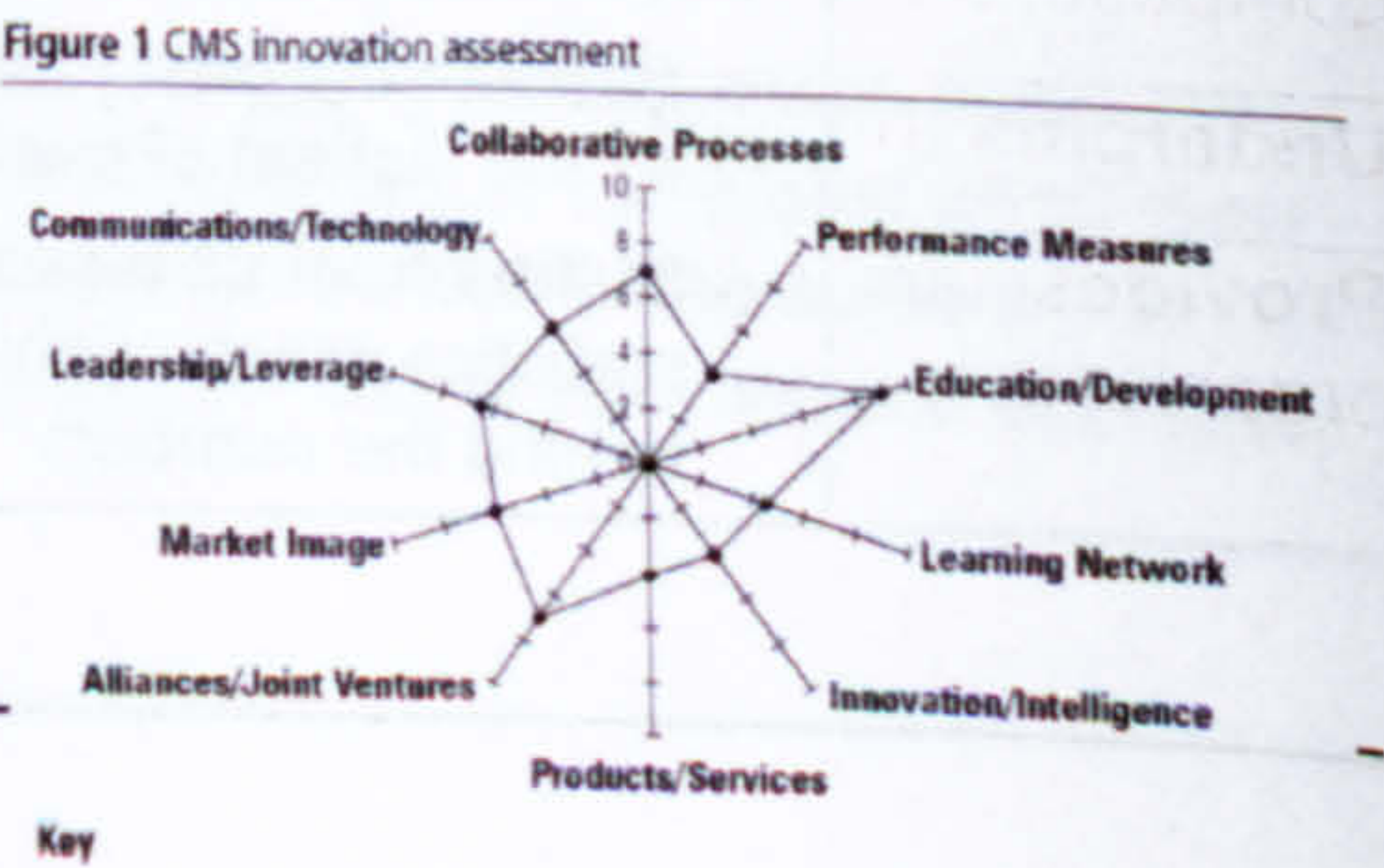
Second Approach: An accounting report format - Skandia Navigator

In 1994, Skandia became the first company in the world to publish a formal report on intellectual capital (IC), as a supplement to its annual report. The report mirrors the structure of the concept behind it (the home-shaped Skandia Navigator), and on the other hand resembles traditional accounting reports, making it more acceptable by the many professionals used to this language. (Skandia, 1996)



Third Approach: the radar chart: the Knowledge Innovation tool

Debra Amidon chose to represent the results of IC assessments using the Radar chart graphic visualisation (Freeman, 1999). The advantage is that it clearly represents the multi-dimensions of the IC framework and allows the user to identify quickly the weakness and strengths areas. It is possible to drill

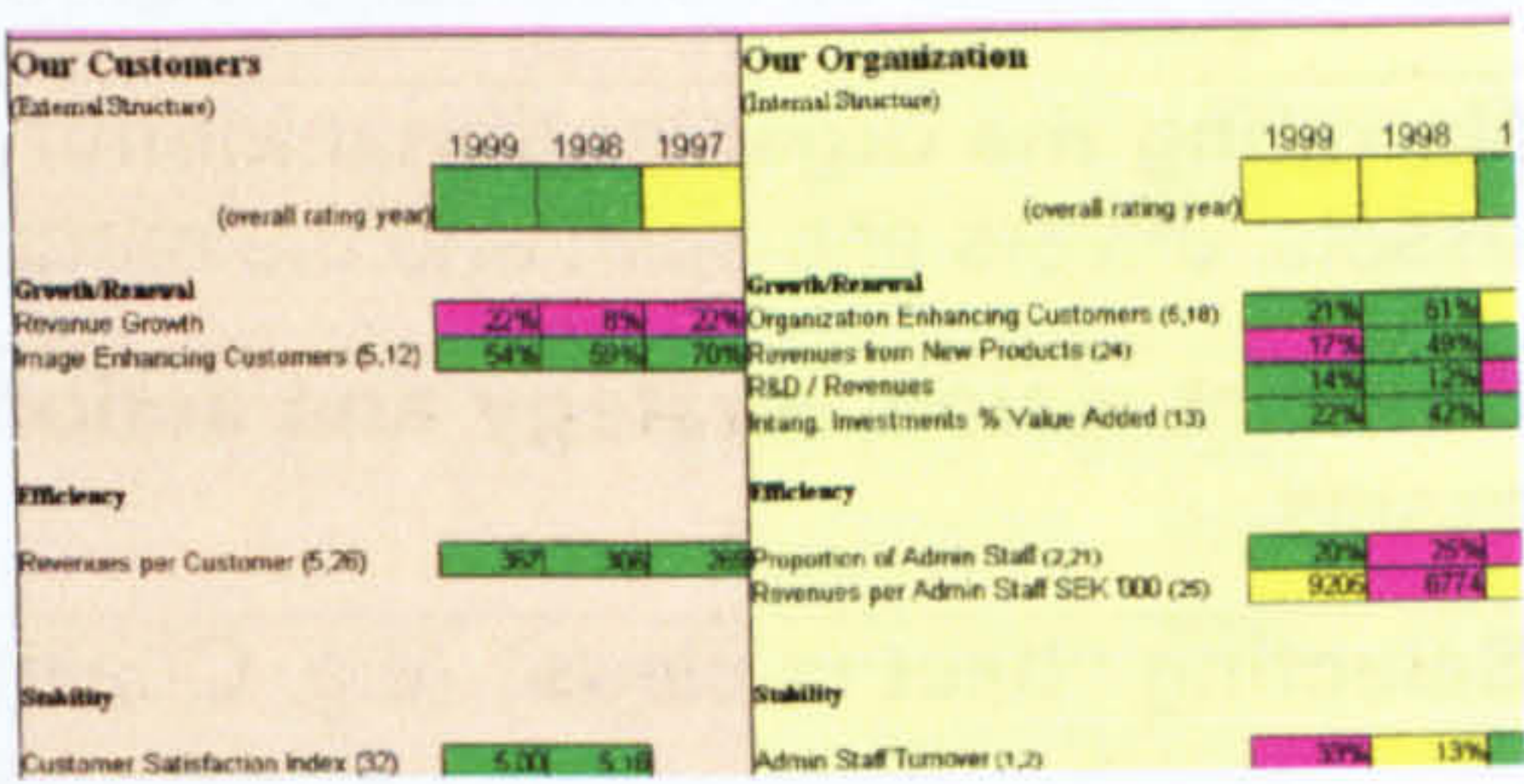




down each category, in order to get more details on a specific IC area.

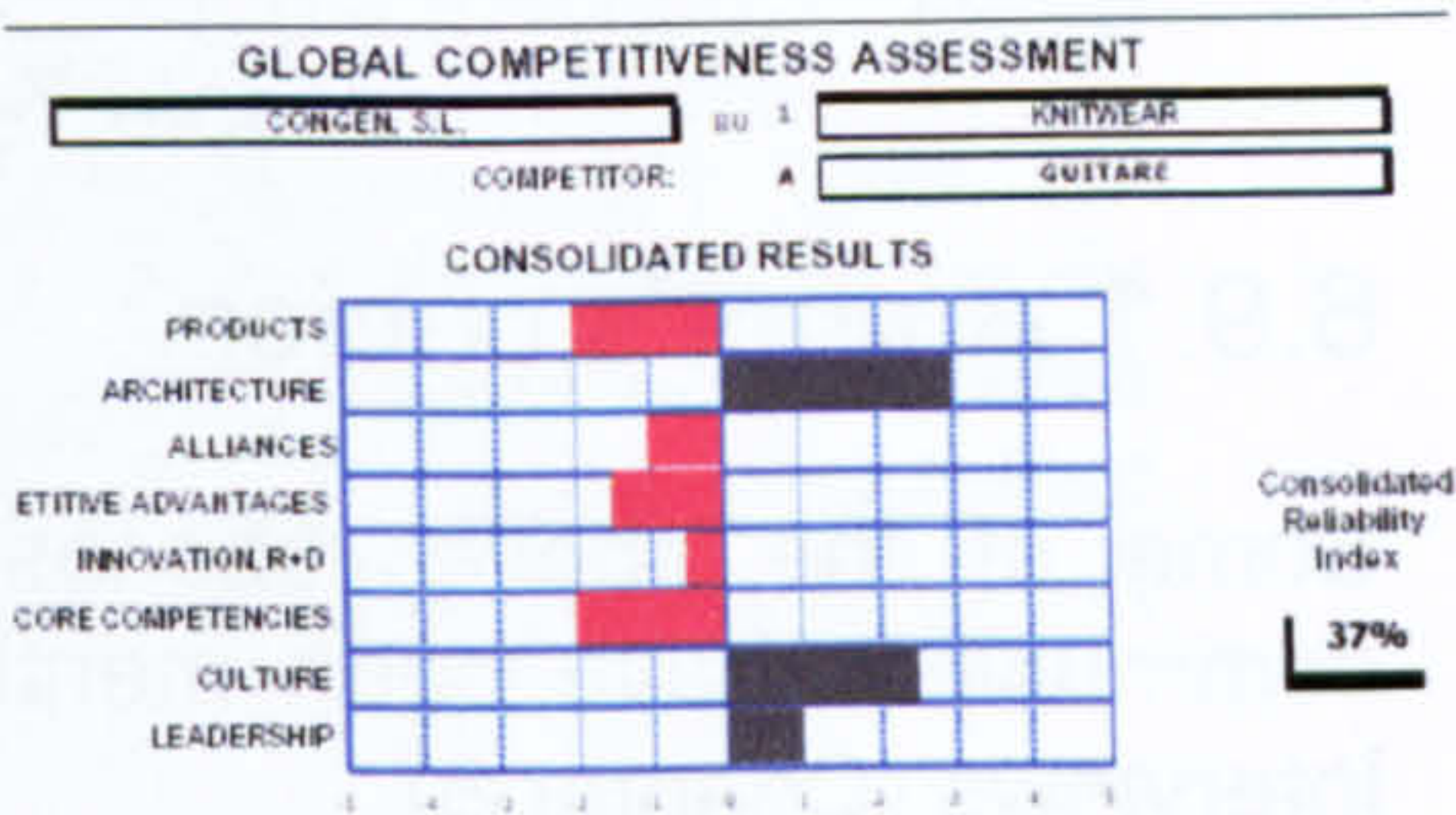
Fourth approach: The Intangible Assets Monitor

The monitor presents the rating of each IC category, by showing the rating of the category's set of indicators and their average value. It uses colours coded system based on the red / yellow / green "Traffic lights" approach to represent indicators significantly beyond target (red), slightly beyond target (yellow) and on and above target (green). The following figure shows a partial view of the 1999 IC report of the Swedish company Celemi (Sveiby, 1997).



Fifth approach: The benchmarking graphical report

This visualisation approach was suggested by Marti in order to clearly visualise the gaps between the assessed organisation and the best world competitor (Marti, 2002). It uses a graphical scale of -5 - +5, where the left side (the negative numbers, also coded in red) indicates that the specific IC asset of the assessed organisation is inferior to the best in class competitor.



6.8.1 Author's choice

The author decided not to adopt any of the surveyed approaches. None fit completely with the functions required from the Professional Communities IC visualisation tool (elaborated in Chapter 7). Instead, the author used the IC Tree concept and metaphor as the backbone of the visualisation in the tool, augmented by ideas taken from some of the approaches presented above. For example, the author adopted from Sveiby the traffic light coding scheme, but modified into a 4 colour scheme. As to visualisation of flows and exchanges of IC – the author found visualisation approaches for internal flows but none for flows between separate entities. Therefore the author developed an alternative way (also elaborated in Chapter 7).

6.9 Construct 7: The uses of IC reports

Scanning the literature of IC reveals multiple potential uses of IC reports. The following table shows these uses.

Reasons for using IC reports	Sources
<b>Reporting</b> to share holders (complementing the financial reports), and attracting financial capital	Roos <i>et. al.</i> , 1998 Lev, 2000 Sveiby, 2002
<b>Valuation</b> of corporations, in the process of Mergers and Acquisitions	Loverde, 2001
<b>Benchmarking</b> and identification of strategic gaps in the organisation competitive situation	Marti, 2001
<b>Underpins</b> the development of the future value of the organisation	Pablos, 2002
<b>Provides an integrative picture</b> of all intangible assets of the organisation	Pasher, 1998b Pablos, 2002



Conscious raising and communication of importance of IC	Petty and Guthrie, 2000
Public relations, i.e. <i>"justification of one's existence"</i>	Sveiby, 2002
Platform for meaningful conversations: As a way to encourage, facilitate and focus conversations around ICs,	Roos et. al., 1998
Narrating the organisational identity and identification of the unique assets, drivers and spirit and the organisation.	Bukh, 2001
Connect vision, strategy and action items in the area of intangible assets	Roos et. al., 1998
Selecting "best in class" (e.g. Quality Award nominations)	Baldrige, 2002
Learning – uncovers costs, discover opportunists for value creation otherwise hidden. According to Sveiby (2002), <i>"this motive promises the highest long-term benefits"</i>	Sveiby, 2002

Table 7-5: Reasons for using IC reports

### 6.9.1 Author's choice

Some of the above reasons for using IC reports in the case of professional communities have been mentioned by QM and KM communities' members in the interviews (Chapter 8).

However, the author decided to use the IC report tool primarily for three inter-linked purposes of which the first two were listed in the table above and the second was not covered in the literature:

- **Platform for meaningful conversations:** with professional communities' members.
- **Identification of challenges and improvement opportunities.**
- **Surfacing potential IC exchanges:** using the reports as a tool to support the community member and author alike to identify potential exchanges of flows between professional communities.

Potential Secondary uses of the professional communities IC reports are described in the concluding chapter of this thesis.

## 6.10 Integration of the seven constructs

So far the author has deconstructed the analysis of IC as the research framework into several constructs. The literature around each construct was reviewed, alternative approaches were explored, and the chosen approach was highlighted. Now they are integrated into a holistic research framework.

- **Intellectual Capital (construct 1)** – the author suggests referring to the intangible attributes of professional communities as "Intellectual Capitals". The categories used in the IC vocabulary, such as "Structural Capital" and "Human Capital" seem relevant to professional communities.
- **The unit of analysis (construct 2)** - The concept of IC was applied so far to nations, corporations, departments within corporations, networks of corporations and the individual. The author suggests expanding the scope of IC and applying the concept also for professional communities. The framework will refer to professional communities at all levels – from the national level to the company level.



- ❑ **The particular IC model (construct 3)** – the author suggests using the “IC Distinction Tree” as the particular IC model to be applied in this research. The model lists the specific IC assets categories and the hierarchical relationships between them. However, the author felt the need to add several assets types, so the model will fit better to the case of professional communities.
- ❑ **Flows and exchanges of IC (construct 4)** – in Chapter 5, the author already presented possible relationships between professional communities in general, and QM and KM communities in particular. Once the author decided to use the IC concept as a framework for the research, the author used the idea of flows and exchanges of IC to describe and analyse these relationships. The author is focusing on External Flows between the communities, and within the current research is less concerned with the internal flows within each community. As opposed to the case of water flows, the flow or exchange of intangible assets is not a natural phenomenon that occurs spontaneously. The framework identifies several conditions that must be satisfied in order to enable IC flows and exchanges.
- ❑ **Assessment of IC (construct 5)** - One motivational condition to IC exchanges is the awareness for potential exchanges and the case for realising them. Assessment of the current situation of ICs of each community is a vehicle to increase this awareness. After considering the alternative approaches to IC assessment, the author decided to apply an approach that is based on subjective assessments and self-assessment rather than on quantitative indicators.
- ❑ **Visualisation of ICs (construct 6)**: The IC assessment is done as an awareness-raising vehicle and as a way to recognise possible flows. Therefore the need for effective communication of the assessed IC situation and clear visualisation that enables easy identification of potential flows is important. The author explored many available IC visualisation approaches, but none fitted the purpose. As a result the author needed to develop a new visualisation method, which is based partially on elements of the available approaches.
- ❑ **The uses of the IC report (construct 7)**: according to the literature, there are much potential uses for IC reports. The author adopted two uses from this list: IC reports as basis for meaningful conversations, and tools to identify challenges and improvement opportunities. The author added a new use, which is the primary one in the research – the identification of potential IC flows. All three uses are inter-linked. Another use that will be examined is its application as a scientific research tool.

**The overall integrated framework:** Exploration of potential flows of ICs between professional communities, using the IC distinction tree as a IC assets classification scheme, and applying self-assessment, enhanced by a visualisation method, as a vehicle to identify and communicate such flows.

## 6.11 Conclusions

In chapters 3, 4 and 5 the author explored the challenges of the QM and KM communities and the possible relationships between them; he did this by surveying the literature around these issues.

In a search for a systematic concept that can accommodate the QM/KM relationships question and serve as an established methodological framework for the research the author came across the idea of using Intellectual Capital for this objective.



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In this chapter the author has explored this idea and started to test its applicability. In order to do this, the author deconstructed the evolving body of IC research into seven constructs that seemed to be relevant. For each construct the author surveyed the available literature and alternative approaches and chose his own (usually either modifying an existing approach or creating a new one partially based on elements from existing methods). The decisions were based mostly on a **"fit for purpose"** criterion.

After making the individual decisions around each construct, the author integrated them into a holistic framework.

The author recognises that that he has based his research framework on the existing concept of Intellectual Capital. However, the advantage of working in the framework of an emerging discipline was enjoyed. As a result, there are several novel elements in this approach:

- The application of IC to professional communities.
- The use of IC reports as a way to identify potential flows between organisations in general and professional communities in particular.
- The use of a new visualisation technique.

The modification of the IC distinction tree, and addition of several new roots.

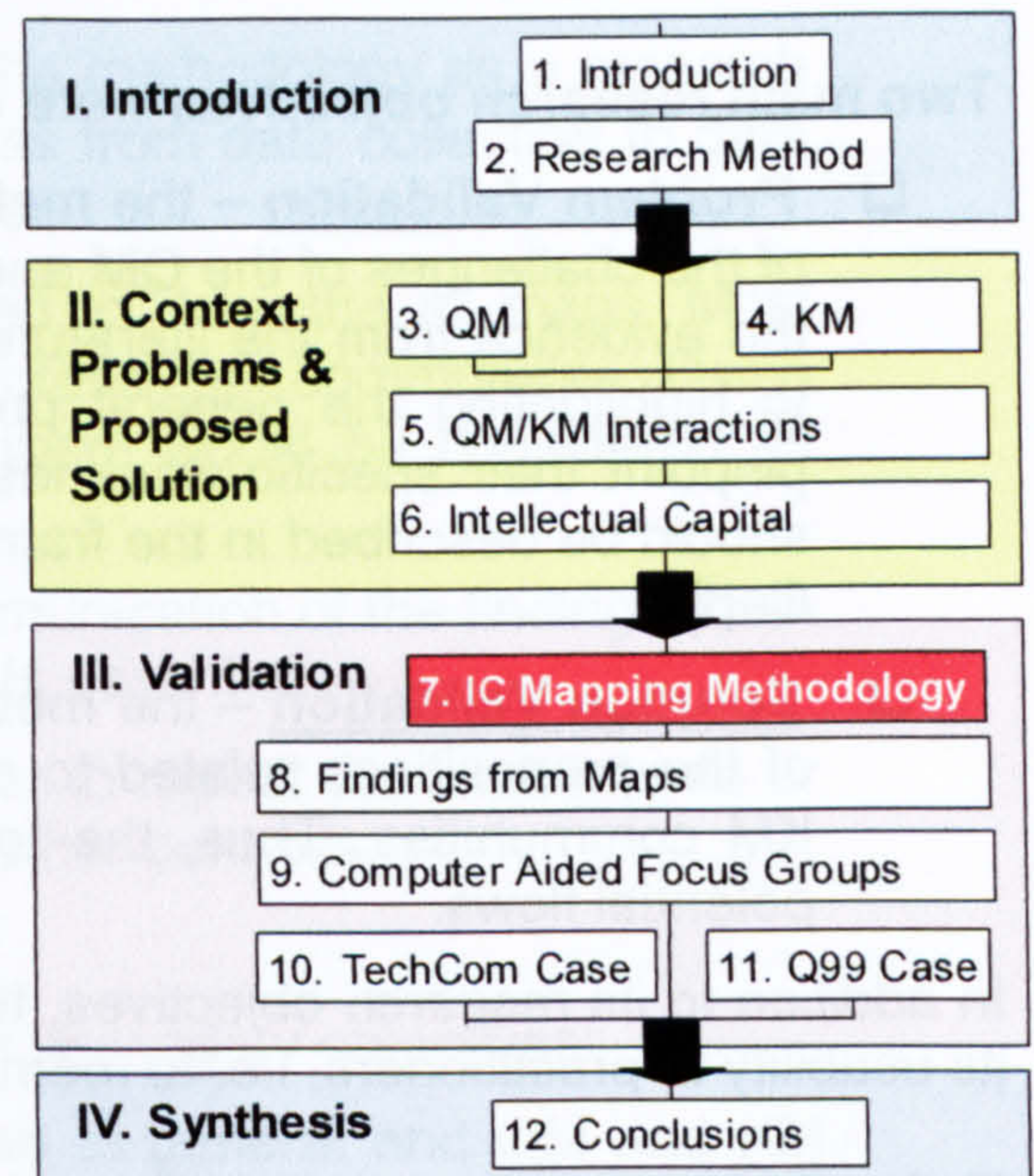


## 7 The IC Mapping methodology

### 7.1 Aims

In this chapter the author describes the application of the IC Mapping methodology that was developed in order to support the validation plan. This chapter answers the following questions:

- What are the objectives of the methodology?
- How was the methodology designed?
- What is the exact testing procedure?
- What are the constructs of the methodology?
- How were experts and communities selected?
- What were the findings concerning the methodology?



This is a **technical chapter** that covers only the processes and tools used by the methodology. The actual findings about the core research question – exchanges of IC between QM and KM communities – are presented in Chapter 8.



*Mapping the IC of a professional community – the process*



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## 7.2 The Objectives of the Methodology

Two main research objectives were assigned to the IC Mapping methodology:

- ❑ **Problem Validation** – the methodology should support the validation of the challenges of the QM and KM communities. It should triangulate the evidence from the literature and the two case studies. In addition to highlighting the general problems of the communities, it should pinpoint their specific weaknesses. The situation of each community should be described in the framework the author chose i.e. Intellectual Capital.
- ❑ **Solution Validation** – the methodology should support the validation of the propositions related to exchange of ICs between the QM and KM communities. Thus, the tool should support the identification of potential flows.

In addition to its research objectives, the methodology will enable the assessment of its usability to practitioners, i.e. to members of the QM and KM community.

## 7.3 How the methodology was designed

The design process can be described as a linear series of six sequential phases.

- a) The author articulated the two main objectives of the tool. These objectives were derived from the set of research questions and hypothesis.
- b) The concept of IC assessment was chosen. The author decided to use IC flows as the framework for the research. The consideration behind this decision is elaborated in the previous chapter.
- c) A specification of the methodology was elaborated, in order to ensure that it fulfilled the objectives, met the needs (and capabilities) of its users and complied with the design constraints.
- d) The specific constructs of the IC framework were chosen (i.e. which IC model, which assessment approach, which visualisation approach etc.).
- e) The author designed the methodology process, i.e. the general flow of its implementation and realisation (see flow chart in the following section).
- f) The author created the elements of the methodology, i.e. the various IC maps, the detailed interview process, the interview selection processes etc.
- g) The author applied a “beta version” of the tools to two interviewees. The feedback was used to improve them.
- h) The author implemented the methodology to the full group of interviewees. Their feedback (critics, comments and improvement suggestions) was recorded as input for a future enhanced version.

## 7.4 Specification of the methodology's functionality

A specification of the methodology was elaborated, in order to ensure that it fulfilled the objectives, met the capabilities of its users and provided some value to them, and complied with the design constraints.



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## 7.4.1 Users and Stakeholders

The author identified three groups of users related to the research objectives:

- **The researcher**, who should activate the methodology as a research tool. Ease of use throughout the process from data collection to data analysis was one of the design concerns.
- **The interviewees** who would be invited to draw the IC maps. Most are members of the QM and/or KM professional communities. Using language and approaches familiar to them would be considered as necessary.
- **The readers of the thesis** – clear communication of the findings (both the overall picture and detailed results) is essential.
- **Other researchers of IC** who may want to repeat the experiments or use the methodology to research IC in other contexts.

Several other users groups are related to the secondary objectives:

- **Leaders of professional communities** in general and QM and KM communities in particular, who may want to use the tool in order to progress their own communities.

## 7.4.2 Functionality

The tool should help to perform the following functions:

- **Map the perceived<sup>10</sup> situation** of the QM and KM communities, using the IC framework.
- **Highlight weaknesses** of the communities, in order to validate the research problem and expose improvement opportunities.
- **Highlight strengths** of the communities, in order to highlight potential sources of ICs to be exchanged.
- **Show the “big picture”** of each community (i.e. not only specific detailed weaknesses and strengths). Therefore the tool should enable the upward aggregation of the perceptions of ICs of specific roots.
- **Highlights gaps** in specific ICs between communities, in order to help the users identify potential exchanges and flows.
- **Facilitate a meaningful conversation** around the above issues.
- **Provides immediate benefit** to the interviewee, in the form of new insights, learning and perhaps early thoughts on action items.
- **Enable comparison** of ICs of different communities.
- **Enable numerical aggregation of the situation of several communities** (e.g. all assessed KM communities) in order to generalise the findings.
- **Enable statistical testing** of the significance of the outputs.

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<sup>10</sup> The term “perceived” is applicable to all functionality – the tool is not designed to represent an objective reality, but to elaborate, explicate and communicate the perceptions of members of the communities.



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- ☐ Provide feedback to the researcher on the tool usability in order to enable immediate improvements.

#### **7.4.2.1 Ease of use**

The tool should be “easy to use” by its intended users, who were specified above. This implies:

- ☐ The implementation will require complex infrastructure at the user site.
- ☐ Quick set-up with minimal or zero training of the interviewees.
- ☐ Rapid assessment of the results during the meeting (so the interviewees will see the picture instantly).
- ☐ Rapid post-meeting processing.
- ☐ Optional Virtual operation, since some of the planned interviewees were located in other countries and a face to face meeting would be difficult to realise.

#### **7.4.2.2 Development guidelines**

In order to comply with the time and resources constraints of the researcher, the following development guidelines have been specified:

- ☐ Minimal technical investment, so the researcher will focus its resources on design of functionality, not on programming. The implication of this guideline was to use the basic features of Microsoft Office tools.
- ☐ The design will allow small adjustments during the research period (no technical limitation – only scientific ones) (e.g. changing structure, IC roots names, scales, colour scheme).
- ☐ The methodology will be based on known and familiar methods and visuals (e.g. Gaps concept, Traffic lights, Existing IC hierarchical structures).
- ☐ But at the same time, the methodology will be novel and include some new ideas.

### **7.5 The IC mapping process**

#### **7.5.1 The methodology**

The methodology clarifies and collects the perceptions of relevant subject matters – mostly senior QM and KM communities’ members, regarding the potential exchanges of ICs.

The data is collected through interviews, where each interview refers to a specific pair of QM/KM communities the interviewee is knowledgeable about.

In each interview, the interviewee draws (or more precisely colours) an IC map – firstly for each community and then for exchanges between the communities<sup>11</sup>. Completing each part of the maps involves a semi-structured conversation between the interviewee and interviewer.

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<sup>11</sup> In a few interviews the interviewee was familiar with either the KM or QM community. In those cases, IC exchanges were not discussed.



Using simple mathematical manipulation, the outputs from all interviews are accumulated in order to provide a generalised picture of ICs of each group of communities and of exchanges between these groups.

An overview of the process is given in the following flow chart:

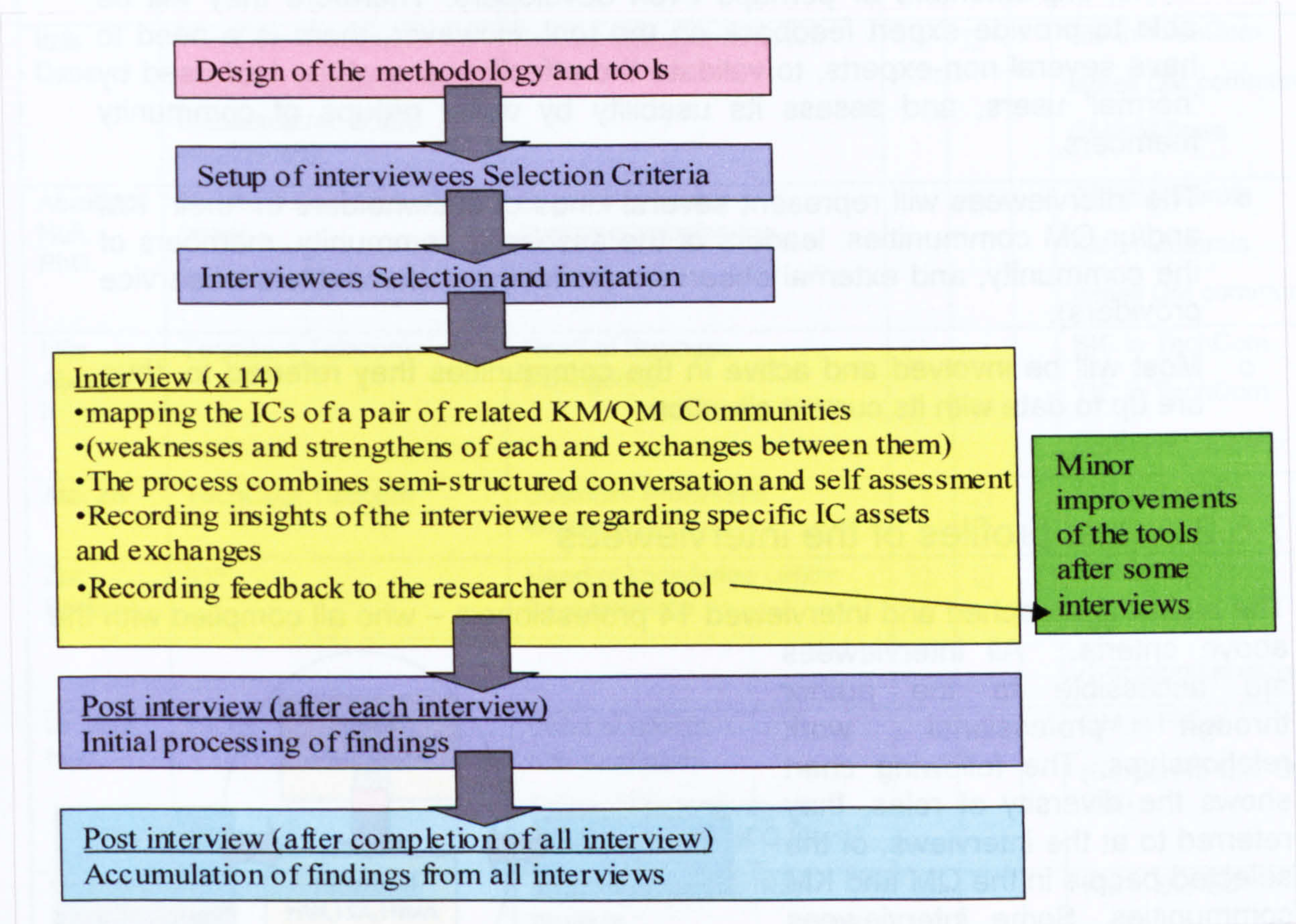


Figure 7-1: Flow chart – an overview of the process

## 7.6 Selection of interviewees

### 7.6.1 Selection Criteria

In order to gain multiple perspectives, and ensure that each perspective is based on reasonable knowledge of and familiarity with the explored issues, the author used several criteria to guide him in selecting the interviewees:

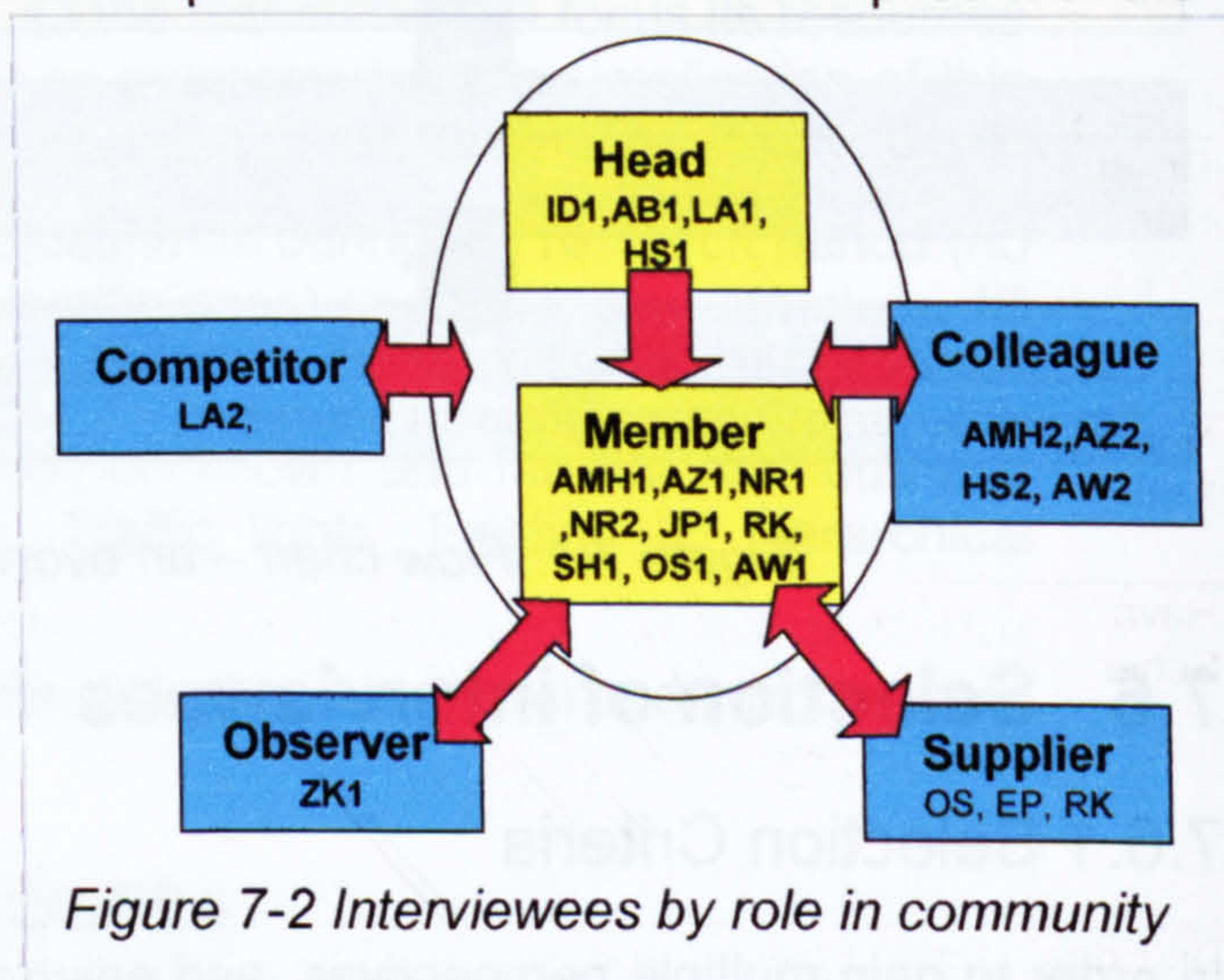
- All interviewees must be a Subject expert in one of the areas covered by the research: QM, KM, and IC.
- All interviewees need to have some knowledge on **both** QM and KM. Some will belong to both communities.
- Most interviewees need strong Industrial background to ensure that perceptions are based on hands on experience with the issues the author explored.
- But, several interviewees will have research/ academic background, which will lead to more scientific-based and possibly more objective perspectives.
- Several interviewees will be familiar with the two pairs of communities covered by the case studies, i.e. the Israeli QM and KM communities, and TechCom's QM and KM communities. This will allow direct triangulation of the findings from these cases.



- Several interviewees will be strongly involved in European / American QM/KM communities, in order to add an international perspective on top of the Israeli one.
- Some interviewees will be familiar with the assessment systems<sup>12</sup> – as users, implementers or perhaps even developers. Therefore they will be able to provide expert feedback on the tool. However, there is a need to have several non-experts, to validate the effectiveness of the tool used by ‘normal’ users, and assess its usability by wider groups of community members.
- The interviewees will represent several kinds of stakeholders in “their” KM and/or QM communities: leaders of the assessed community, members of the community, and external observers (colleagues, competitors or service providers).
- Most will be involved and active in the communities they referred to, thus are up to date with its current situation.

## 7.6.2 Actual profiles of the interviewees

The author approached and interviewed 14 professionals – who all complied with the above criteria. All interviewees are accessible to the author through professional work relationships. The following chart shows the diversity of roles, they referred to at the interviews, of the selected people in the QM and KM communities. Some interviewees hold different roles in the two communities they were interviewed about. Six roles were identified:



- ☐ **Head:** the leader of a community.
- ☐ **Member:** a member of the community.
- ☐ **Supplier:** service provider to the community (e.g. consultant).
- ☐ **Observer:** observe the activities of a community without being involved in it.
- ☐ **Colleague:** report on a community, which acts closely next to his/her community.
- ☐ **Competitor:** report on a community that is considered by him/her as a competitor.

The following table shows the diversity of expertise areas of the interviewees. The table was used as a checklist during interviewees' list creation to ensure that all areas were covered.

<sup>12</sup> This requirement was easy to fulfil, since many QM, KM and IC people are familiar with assessments tools used by their disciplines.



Name	Organisation	Role	Expertise area			Interview focus
			K M	Q M	I C	
Itzik Dana	TechCom Telecom (Telecom developer and manufacturer, 5,000 employees)	Quality Management AVP	<input type="checkbox"/>	<input type="checkbox"/>		QM in TechCom Israeli QM community QM/KM flows
Abraham Huli, PhD.	Motorola Communication Israel Israel Quality Association	Director of quality & customer satisfaction President		<input type="checkbox"/>		QM in Motorola KM in Motorola Israeli QM community
Lilia Aberbuch	TechCom Telecom	Head of Business Intelligence	<input type="checkbox"/>			BIC in TechCom TIC in TechCom (both part of KM)
Atai Ziv	TechCom Telecom	Business Processes engineer	<input type="checkbox"/>	<input type="checkbox"/>		QM in TechCom
Zur Keren	IDF	Head of knowledge centre for excellence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	QM in IDF KM in IDF (Sociological aspects)
Dr. Ami Hari	HiDef	Chief of design methodologies Editor, "The language of quality – lexicon of Q terms"		<input type="checkbox"/>		QM in HiDef (Corporate QM, Overall QM)
Norman Roth	Fraunhofer Institute	Senior researcher, KM projects	<input type="checkbox"/>			KM in the EC PM in the EC
Hava Scher	HiDef (defence systems, 4,000 employees)	Director for Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	QM in HiDef KM in HiDef IC in HiDef Israeli QM community
Dr. Edna Pasher,	Edna Pasher & Assoc. management consultants	CEO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Israeli KM community IC
Prof. Ron Kennet	KPA Juran Institute Quality Progress	CEO Israeli Representative Co-editor, International column		<input type="checkbox"/>		QM community
Scott Hawkins	Skandia AFS	Sustainable Synergist	<input type="checkbox"/>		<input type="checkbox"/>	
Juan Prieto	European Commission IST program,	Projects officer	<input type="checkbox"/>			
Dr. Ora Setter	Nihulim Ltd. Tel Aviv university	CEO Lecturer	<input type="checkbox"/>	<input type="checkbox"/>		Israeli QM community Israeli KM community
Arian Ward	Knowledge Frontiers (previously Hughes CKO)	CEO	<input type="checkbox"/>		<input type="checkbox"/>	US KM community

Table 7-1: List of interviewees



# 7.7 Interview Procedure

A standard procedure for the interviews was planned. Most interviews were planned to follow the full procedure, but in a few of the phases this was not realised (e.g. when the interview covered only one community).

While most interviews were based on face-to-face meetings, due to geographical constraints two interviews were virtual – i.e. the interviewees received the maps and questionnaire via electronic mail.

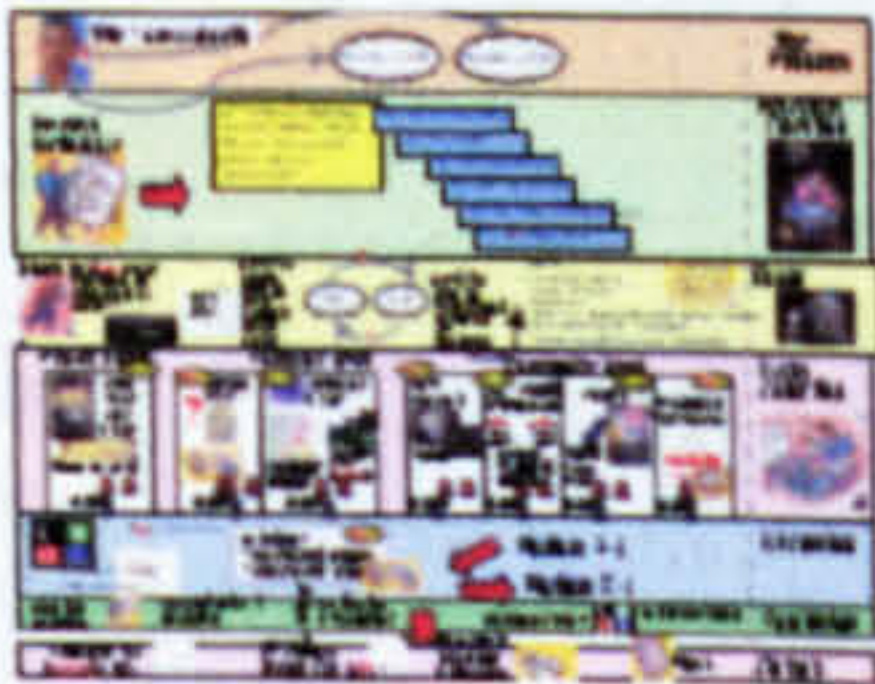
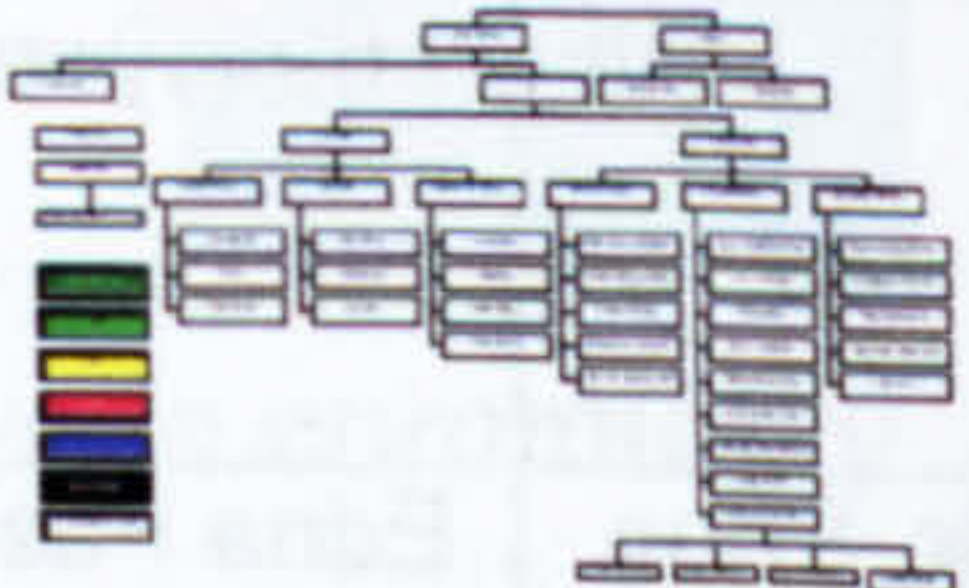
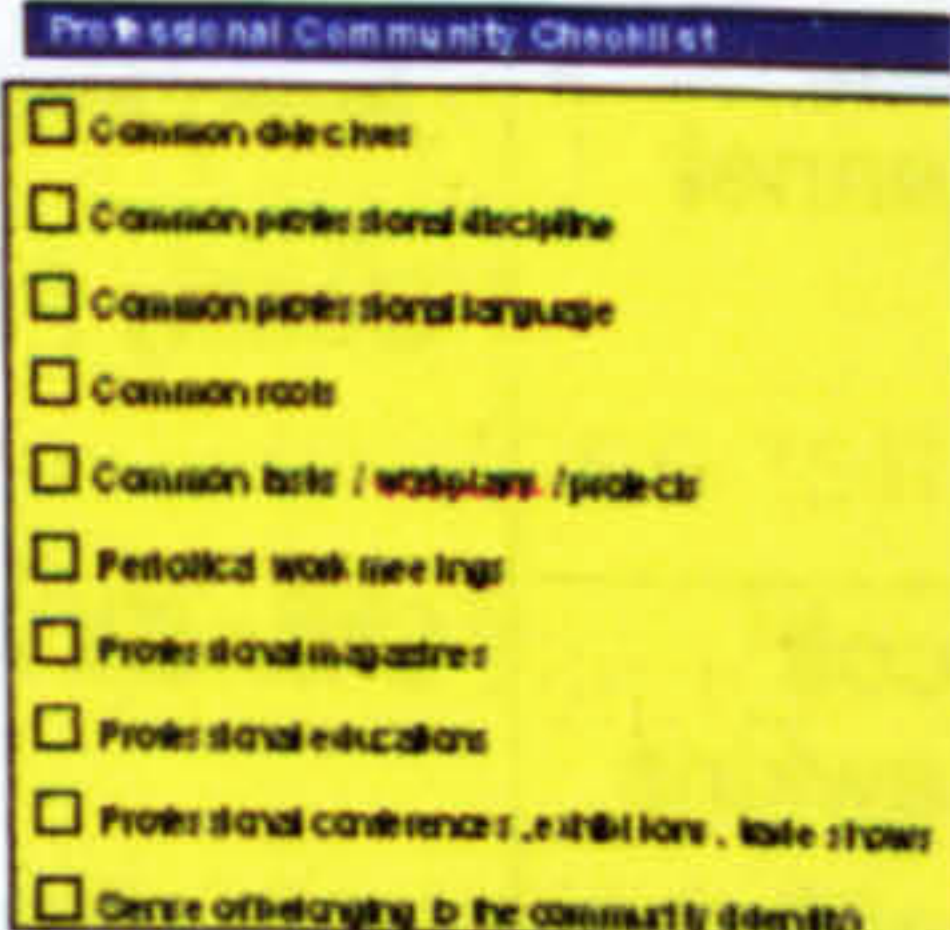
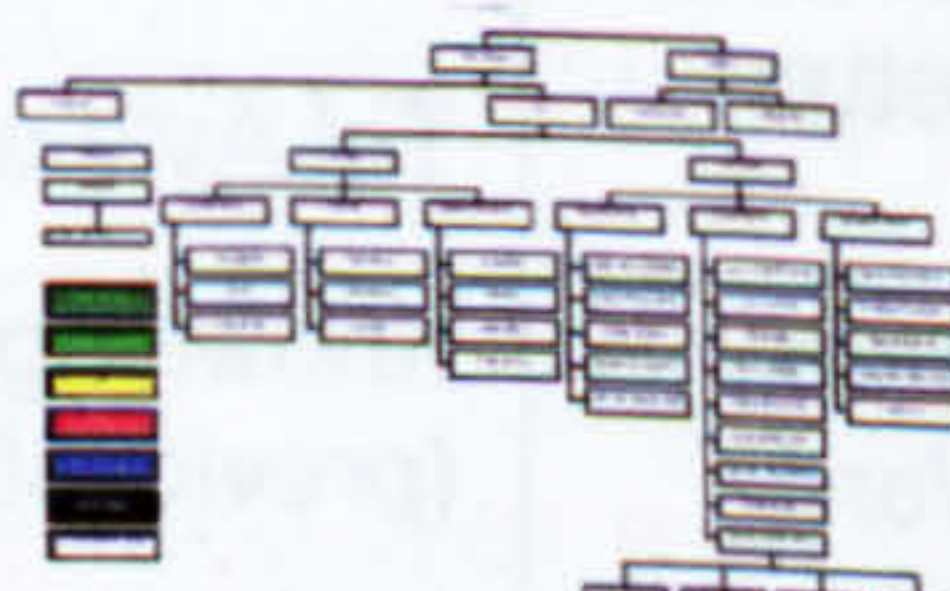
## 7.7.1 Pre-interview Preparations:

The pre-interview preparation was minimal:

- ☐ Telephone invitation, which included a short explanation of the interview objective and interview scheduling.
- ☐ An electronic posting of the questionnaires, IC maps and their completion guidelines (sent only to the two professionals interviewed virtually).

## 7.7.2 Interview outline

The interviews were planned to last 90 minutes. The following table presents the standard interview outline, and which tools were used at each phase.

#	Process	min	Tools
1	<p><b>What:</b> setting the context</p> <p><b>How:</b> Researcher explains research and research objectives, and reason for selecting the particular interviewee.</p> <p>Highlights with marker in real time the interview focus areas.</p> <p>Explain interview flow.</p>	10	<p>Research visual map (A3 size)</p> 
2	<p><b>What:</b> introduce the concept of IC</p> <p><b>How:</b> Researcher explains IC model (what is IC, what are the main IC categories).</p>	10	<p>IC navigator sheet</p> 
3	<p><b>What:</b> Definition of the communities to be assessed</p> <p><b>How:</b> Researcher explains what a professional community is.</p> <p>Interviewee identifies the relevant communities, which are the subject of next phases. Also defines the borders of the community (who is included).</p> <p>Researcher uses the professional community checklist to assist the interviewee, in case of doubt.</p> <p>This phase is done through a conversation.</p>	10	<p>The professional community checklist.</p> 
4	<p><b>What:</b> Assessment of the IC of the selected community.</p> <p><b>How:</b> Interviewee uses colour pens to mark situation (red / yellow /green / blue).</p> <p>The assessment is based on a bottom up process (i.e. starting with the lower level root, and moving upward)</p> <p>Researcher asks guiding questions, asks and documents anecdotes and reasons for scores, provides explanations regarding meaning of specific IC items, using the glossary as a reference.</p>	20	<p>IC map template (A3 size).</p>  <p>IC items glossary</p>



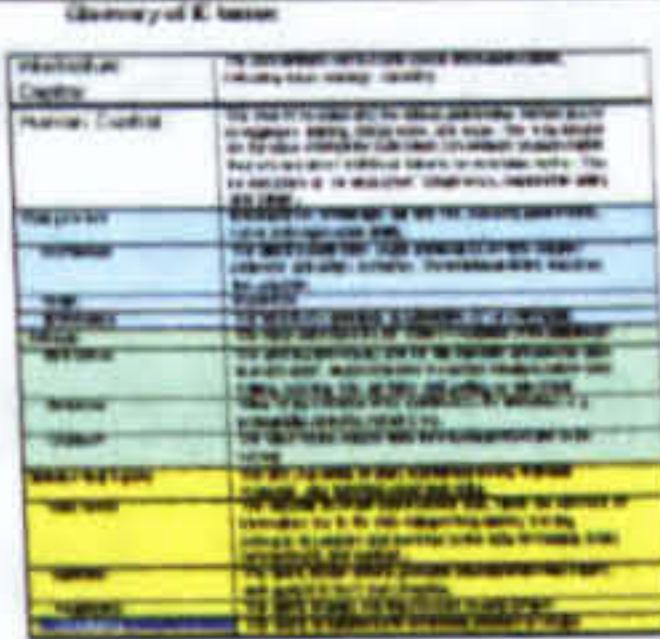

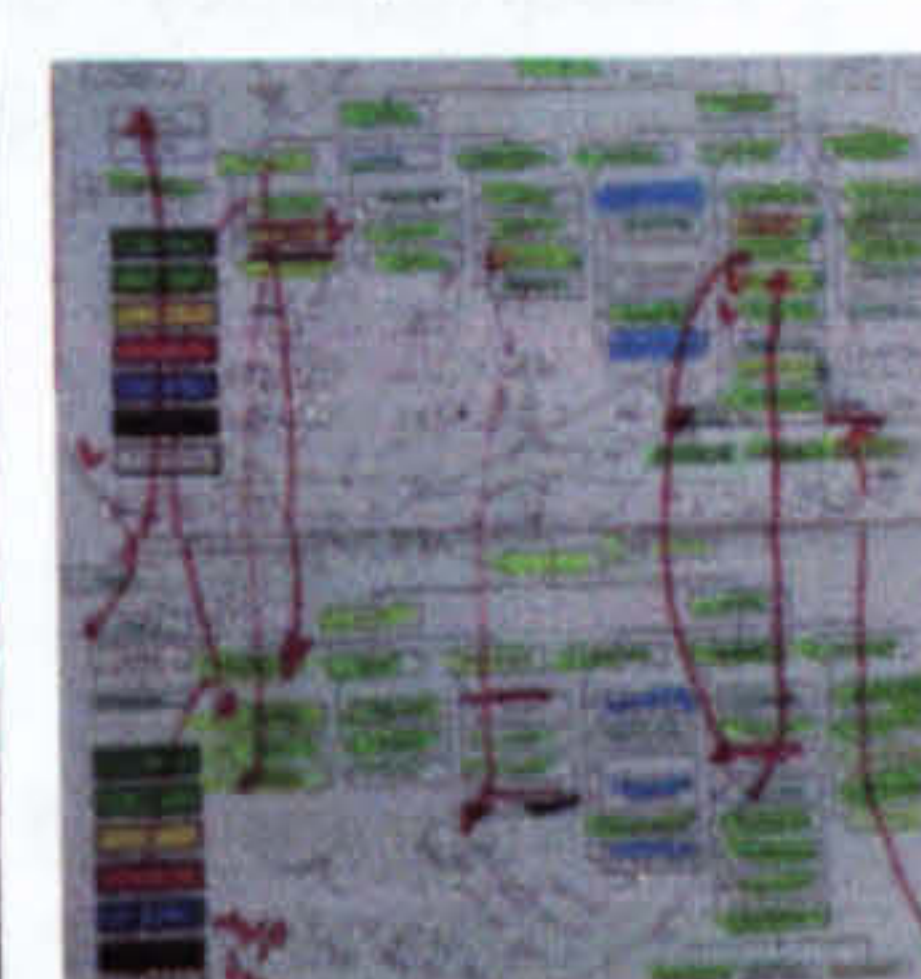
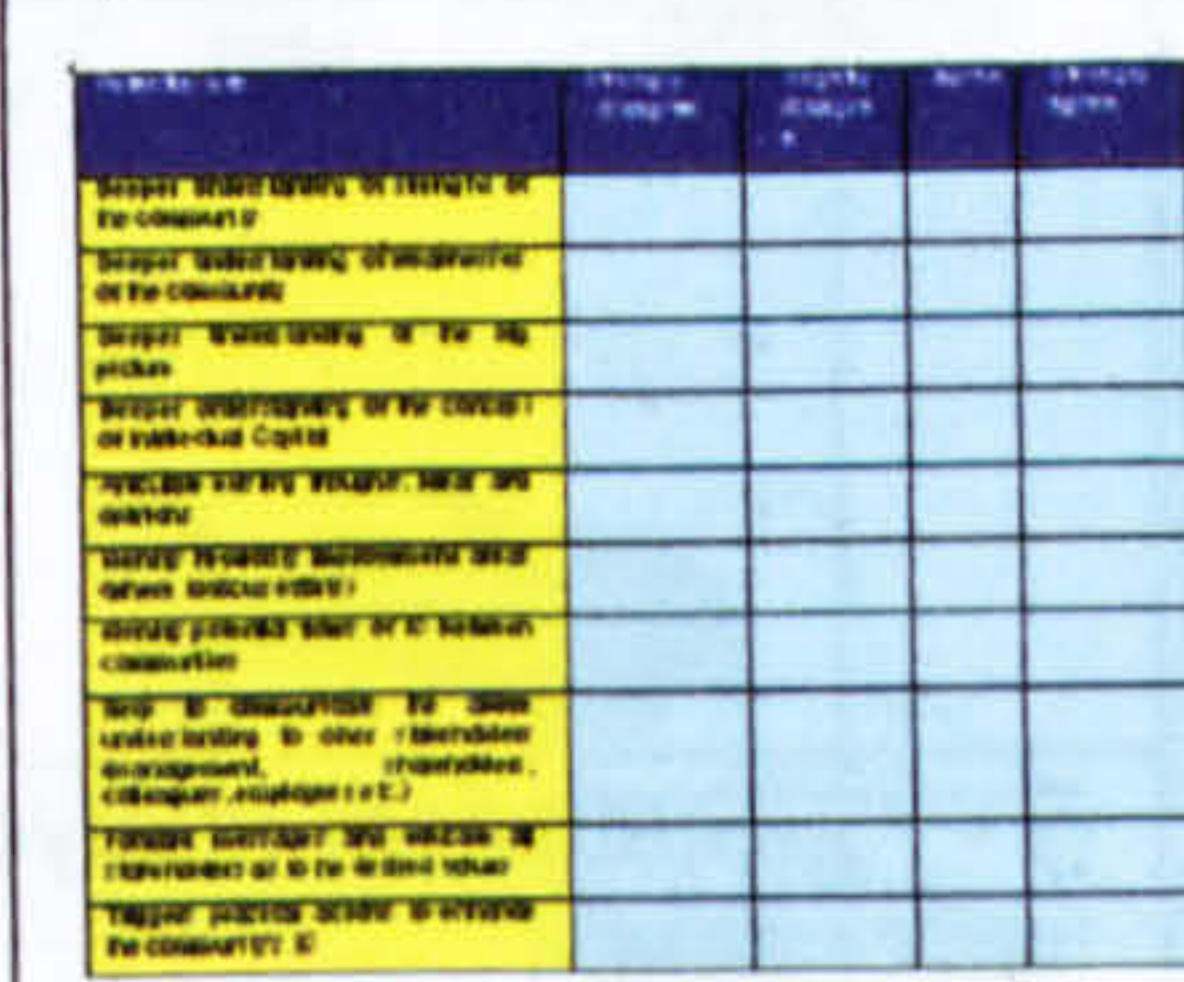
			
5	<p><b>What:</b> reflecting on the “big picture”</p> <p><b>How:</b> The researchers and interviewee look at the completed map. Open conversation about the meaning of the map just completed and the IC of the relevant community – patterns, the most critical weakness, new insights about the community, action items that the interviewee might consider taking.</p>	10	<p>Completed chart created in phase</p> 
6	<p><b>What:</b> completing the IC map of the second community</p> <p><b>How:</b> Repeat phases 4 and 5. (This is a faster phase since the interviewee is already familiar with the IC map.</p>	20	Same as in phase 4
7	<p><b>What:</b> Identification of IC flows between communities</p> <p><b>How:</b> The researcher explains what IC flows are.</p> <p>The interviewee identifies and draws potential exchanges on the two IC maps. The researcher facilitates a small conversation about each flow (e.g. asks for examples, success factors etc.). The possible relationships between the communities are discussed.</p>	15	<p>The two completed IC maps</p> 
8	<p><b>What:</b> Feedback on the methodology</p> <p><b>How:</b> The interviewee completes a short feedback questionnaire.</p> <p>The researcher facilitates a conversation about the tool with focus on two issues: how the tool can be improved, and how the interviewee might use it in the future.</p>	10	<p>Feedback questionnaire</p> 
9	<p><b>What:</b> Interviewee closure</p> <p><b>How:</b> The researcher thanks the interviewee, and promises to provide a short research summary once completed.</p>	5	NA

Table 7-2: Interview procedure

7.7.3 Post interview activities

After each interview, the following tasks were conducted:

1. Digitisation of the manually coloured IC maps using the MS-Org chart tool.
2. Coding the IC maps into Excel, converting colours into numbers, in order to allow statistical analysis of all maps
3. Digitisation of the IC gaps map of the two communities covered by the interview (using the data coded in the excel sheet in the previous phase).
4. Documentation of the notes taken during the interview about each IC asset.
5. In a few cases – modification of the tools, e.g. adding a new IC asset type to the template, to be used in subsequent interviews.



7.7.4 Analysis: an integrative view on the general-communities.

The previous section described the process of the data collection for each **specific** community or for a **pair** of QM/KM communities in a specific organisation. In contrast, the integrative analysis described in this section accumulates all the data in order to help arrive at a conclusion about the QM and KM communities in general.

After the completion of all interviews, an analysis procedure was planned with the following sequential activities:

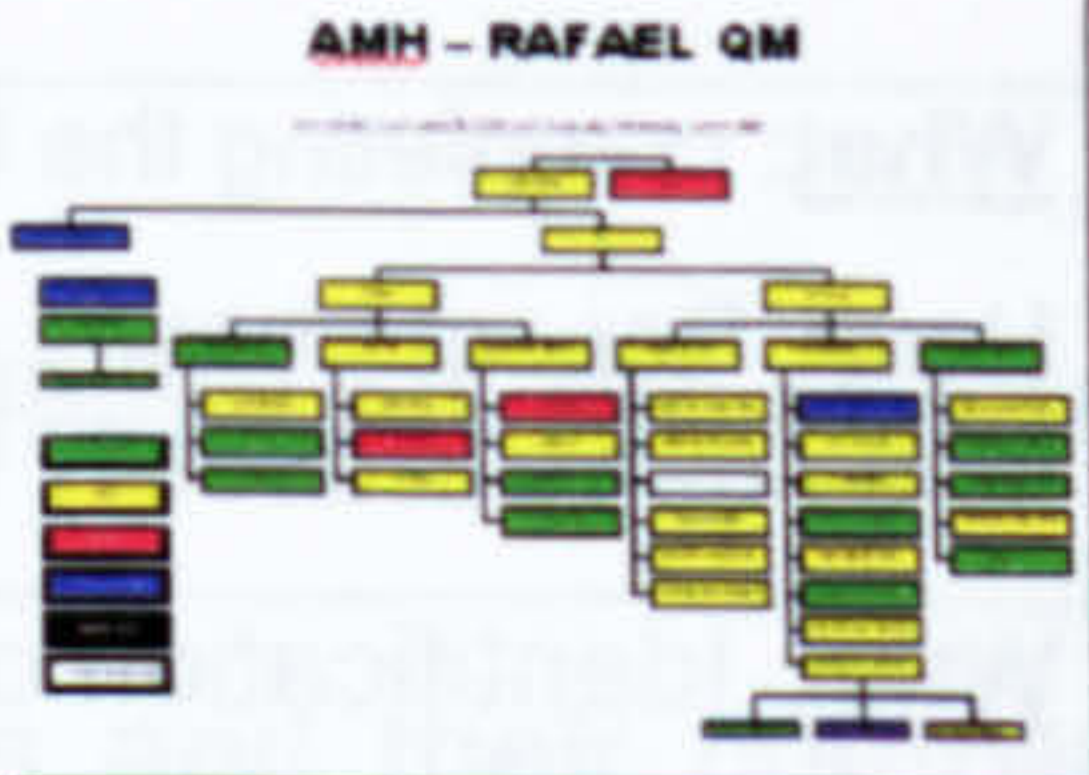

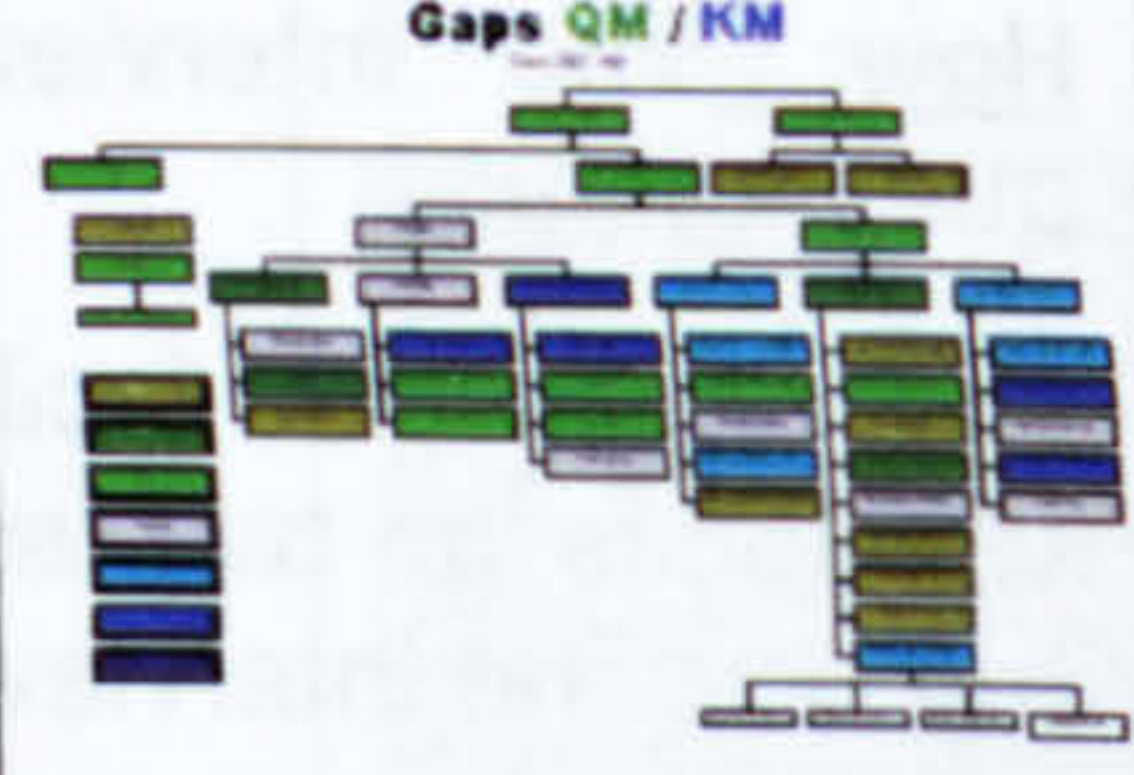

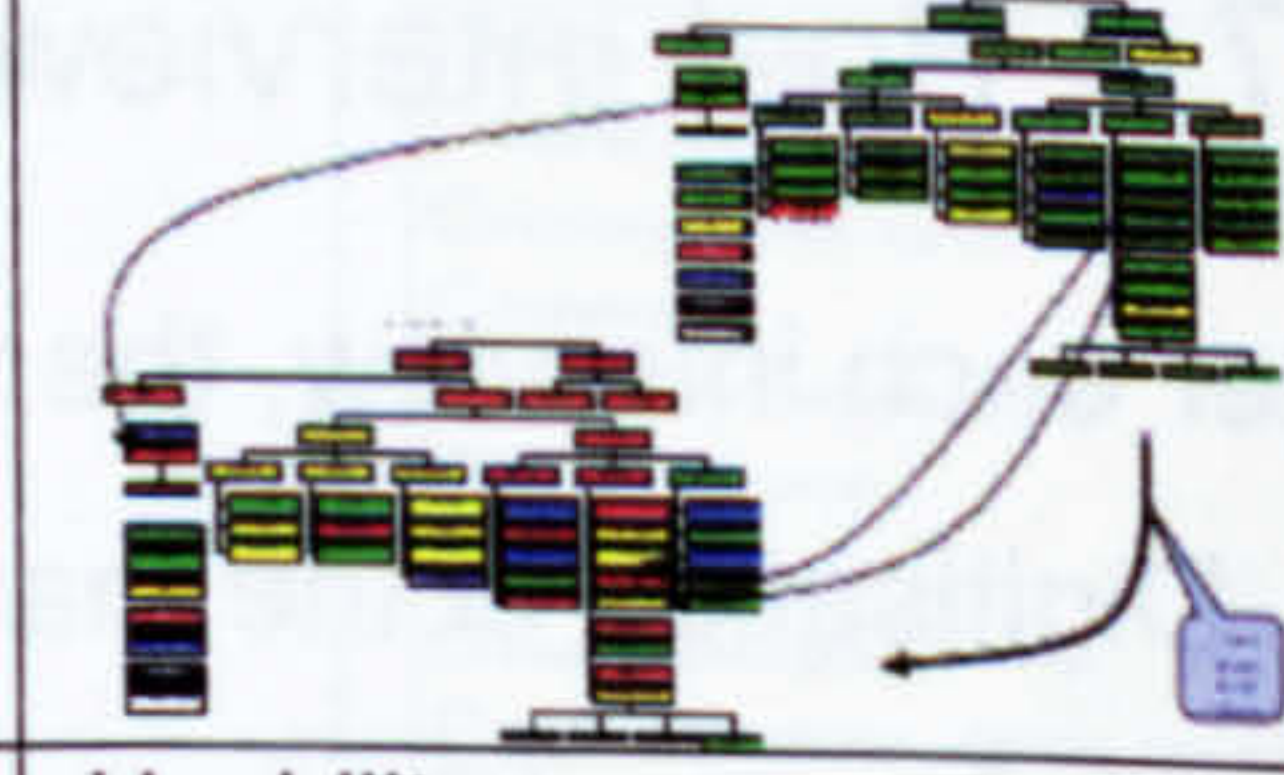

#	Analysis activity	Output
1	Creation of general IC maps of the QM and KM communities each based on the accumulated data of all maps of the respective community.	KM IC map and QM IC map 
2	Accumulation of comments on each IC leaves (e.g. all comments on the "organisational structure" IC asset).	List 
3	Analysis of the IC assets of each general-community (i.e. the QM community and the KM community). This analysis is based on a combination of qualitative data from the accumulated maps, and the qualitative data –comments of the interviewees.	Conclusions on each general-community
4	Creation of an IC gap map for the two general-communities based on the accumulated data of the communities of each general-community.	QM/KM IC gaps map. 
5	Statistical analysis of the significance of the gaps, based on x y z test.	Conclusions of findings' statistical significance. 
6	Accumulation of all suggested IC flows specifically at the pair-of-communities level and all comments discussed during the IC flows phase of the interviews.	List of suggested flows
7	Creation of the integrative IC exchanges map, based on all the available data and conclusions from activities 1-6 above.	IC flows map 
9	Analysis of comments and quantitative findings on tool usability	Usability chart 

Table 7-3: Analysis of IC maps data



The following illustrates the flow chart of the interviews. The blue boxes indicate phases where the interviewer was more dominant, the yellow boxes are assigned to tasks done by interviewer and blue/yellow boxes indicate conversations.

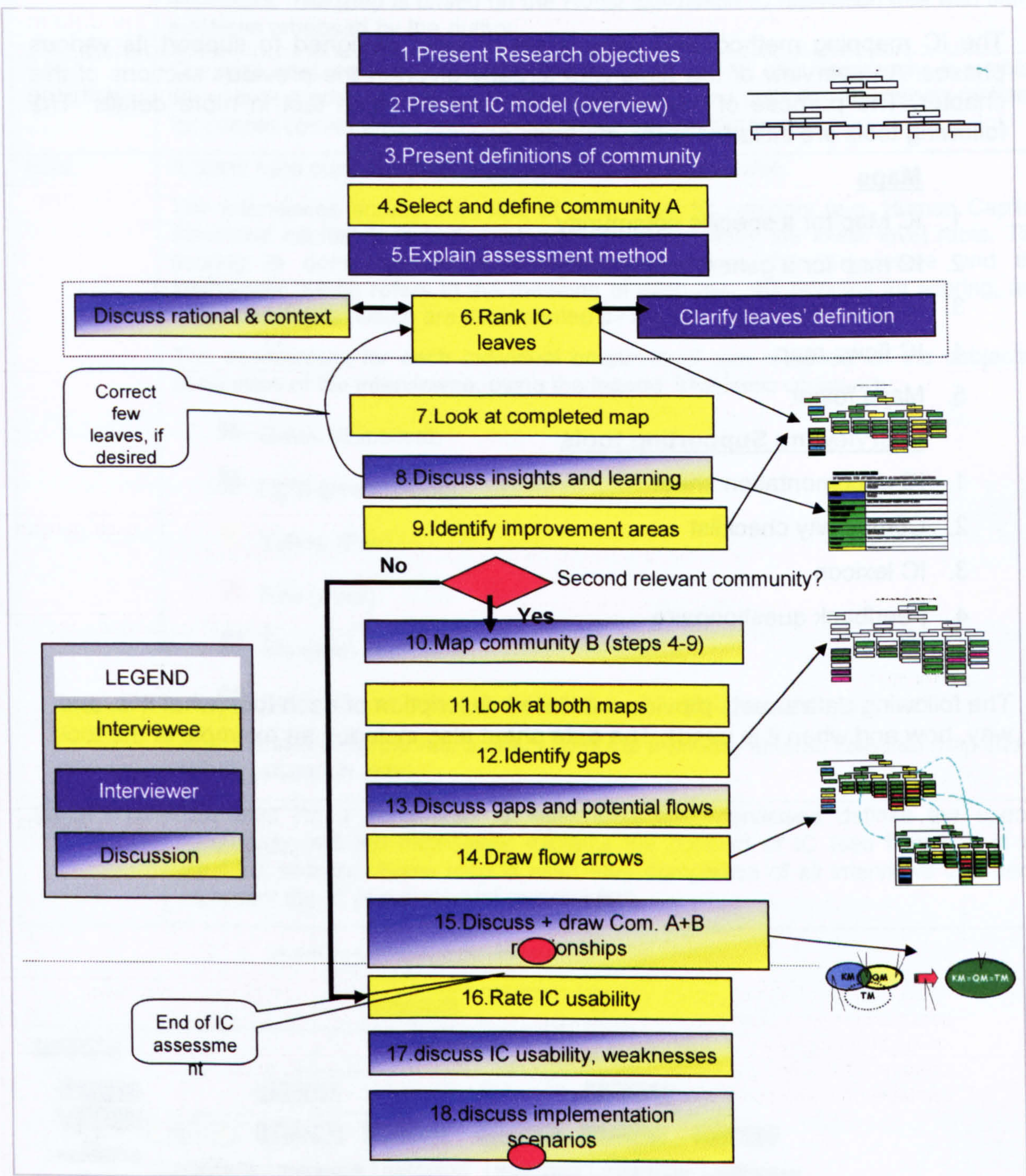


Figure 7-3: Interview flowchart

7.8



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## 7.8 Tool description

### 7.8.1 Overview

The IC mapping methodology uses a set of tools designed to support its various phases. An overview of the tools was already given in the previous sections of this chapter. The purpose of this section is to present each tool in more details. The following tools are included in the methodology:

#### **Maps**

1. IC Map for a specific community
2. IC map for a general-community
3. IC gap map
4. IC flows map
5. Maps folder

#### **Interviewing Supporting tools**

1. IC documentation sheet
2. Community checklist
3. IC lexicon
4. Feedback questionnaire

The following data sheets provide a detailed description of each tool (what it is, and why, how and when it is used). The data sheet also includes an example of the tool.



7.8.2 Tool 1: The IC Map

What:	The IC map represents the IC of a professional community, as perceived by its assessors. The map is based on the Roos/ Edvinsson IC distinction tree with some additions proposed by the author.
Why: Objectives	The map enables a clear visualisation of the IC assets of a community. It enables the user to quickly identify weaknesses, strengths and patterns, and serves as basis for deeper conversation and insights about the specific community.
How:	<p>A blank hard copy template is presented to the interviewee.</p> <p>The interviewee scores the roots of each main IC category (e.g. Human Capital, Structural capital) in a bottom-up sequence, i.e. firstly the lower level roots. The scoring is done through a conversation between the interviewee and the interviewer, which refers to the meaning of each leaf, the reasons for scoring, and other comments, which are documented by the interviewer.</p> <p>The assessment for each individual bottom-level root is based on the subjective perception of the interviewee, using the legend. The basic codes are:</p> <ul style="list-style-type: none"><li>Green (Excellent)</li><li>Light green (Good)</li><li>Yellow (Fair)</li><li>Red (Poor).</li><li>Blue (not applicable)</li><li>Black (the assessor does not have enough information to score).</li></ul> <p>After the interview, the researcher codes the manually entered coloured map into an MS-Organisation chart.</p>
When	The map for a community is filled after the interviewee defines the specific community and the interviewer explains the concept of IC (see flowchart in the pervious section). Same map is used after completion of all interviews in order to represent the IC of the general communities.

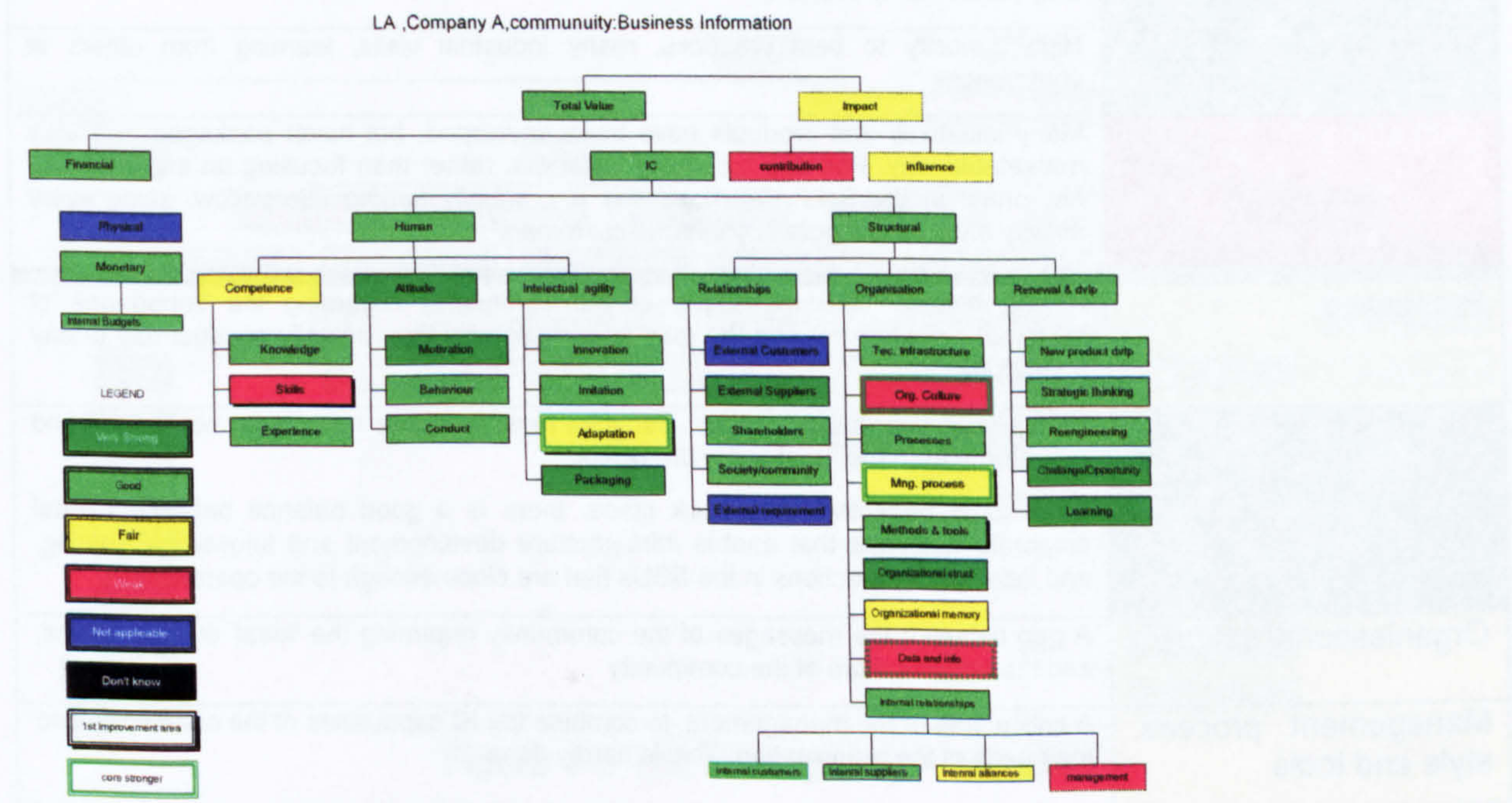


Figure 7-4: The IC Map - example



### 7.8.3 Tools 2: The IC detailed documentation sheet

What: Description	Documentation of the interviewee feedback on selected IC assets.
Why: Objectives	This information complements the scores (colours) assign for IC asset, in order to enrich the map and enhance it with some examples. Justifications and other comments.
How:	<p>The interviewer captures the comments of the interviewee during the IC mapping phase and documents them manually. After the interview the comments are coded into a computerised form (see below).</p> <p>The IC titles are coloured in accordance with the codes in the map for each respective IC group.</p>
When	Completed manually during the IC map completion phase.

	Interviewee: AZ, QM community, TechCom
Impact	Compare to both the strengths of the community and the improvement potential, the impact is low
Physical	Very good laboratories
Budgets	In the last 12 months there have been changes from over-budgeting to under-budget, which eliminate investments in the future (enough resources only for the immediate urgent tasks)
Intellectual Capital	"The real test: The value of the community is now being examined by the management in the May/June 2001 strategic discussions". These discussions may lead to a decision to enhance, decrease or eliminate many quality functions.
Skills	"Don't have the marketing skills to translate a good product into a sell".
Motivation	Two factors that reduce motivation: -being service providers to the real heroes – the engineers and marketing guys -the outcomes of there work is mostly intangible
Behaviour	"I compare the Behaviour against the 'ideal quality person image. There are many greens but quite a few 'reds' that do not practice what they preach"
Conduct	More then anybody else, QM people are aware to the rules and follow them (actually, they define many of them).
Imitation	High curiosity to best practices, many industrial visits, learning from others at conferences
Packaging	Many initiatives and products have been developed, but never packaged in a truly marketable way. Perhaps too many initiatives, rather then focusing on implementing few ones "in the field". <i>"Perhaps this is gradually turning into yellow, since every activity must be budgeted by internal customers"</i> .
Processes	A <u>gap</u> between the messages of the community regarding the importance of systematic processes, and the less systematic way they actually conduct day to day operations.
Organisational structure	<p>Until a year ago, it was 'yellow', because most functions have been centralised and too remote from the 'front line – the SBUs.</p> <p>After some decentralisation took place, there is a good balance between central corporate functions that enable infrastructure development and knowledge sharing, and local quality functions in the SBUs that are close enough to the operations.</p>
Organisational culture	A <u>gap</u> between the messages of the community regarding the 'ideal' cultural values, and the actual culture of the community
Management process, style and tools	A critical role of the management: to combine the IC capabilities of the community and the needs of the organisation. This is hardly done.

Table 7-4: The documentation sheet – example (partial list)



7.8.4 Tool 3: The IC Gap Map

What: Description	The map represents the gaps in specific ICs between two specific communities, or between the QM and KM general-communities.
Why: Objectives	The gap map facilitates the identification of potential opportunities for beneficial flows and exchanges of ICs between two communities.
How:	<p>The data from each map is converted into numbers (e.g. green=4, light green=3 etc.) and digitised into an MS-Excel sheet.</p> <p>The sheet calculates the numerical gaps.</p> <p>This data is converted back into colours and digitised into a MS-Organisation chart.</p> <p>The following codes are used, in the case of two specific communities:</p> <ul style="list-style-type: none"><li><span style="display: inline-block; width: 10px; height: 10px; background-color: #000080; border: 1px solid black; margin-right: 5px;"></span> The IC asset of KM community much better then the respective IC of QM community</li><li><span style="display: inline-block; width: 10px; height: 10px; background-color: #00B0F0; border: 1px solid black; margin-right: 5px;"></span> IC of KM better</li><li><span style="display: inline-block; width: 10px; height: 10px; background-color: #FFFFFF; border: 1px solid black; margin-right: 5px;"></span> QM and KM have same IC score</li><li><span style="display: inline-block; width: 10px; height: 10px; background-color: #B0C4DE; border: 1px solid black; margin-right: 5px;"></span> IC of QM better</li><li><span style="display: inline-block; width: 10px; height: 10px; background-color: #000000; border: 1px solid black; margin-right: 5px;"></span> IC of QM much better</li></ul> <p>In the case of general communities, a scale with 7 steps is used.</p>
When	<p>The IC gap maps are coded after the completion of the interviews.</p> <p>The maps are used when the researcher conducts the analysis of potential flows.</p>

Gaps QM / KM

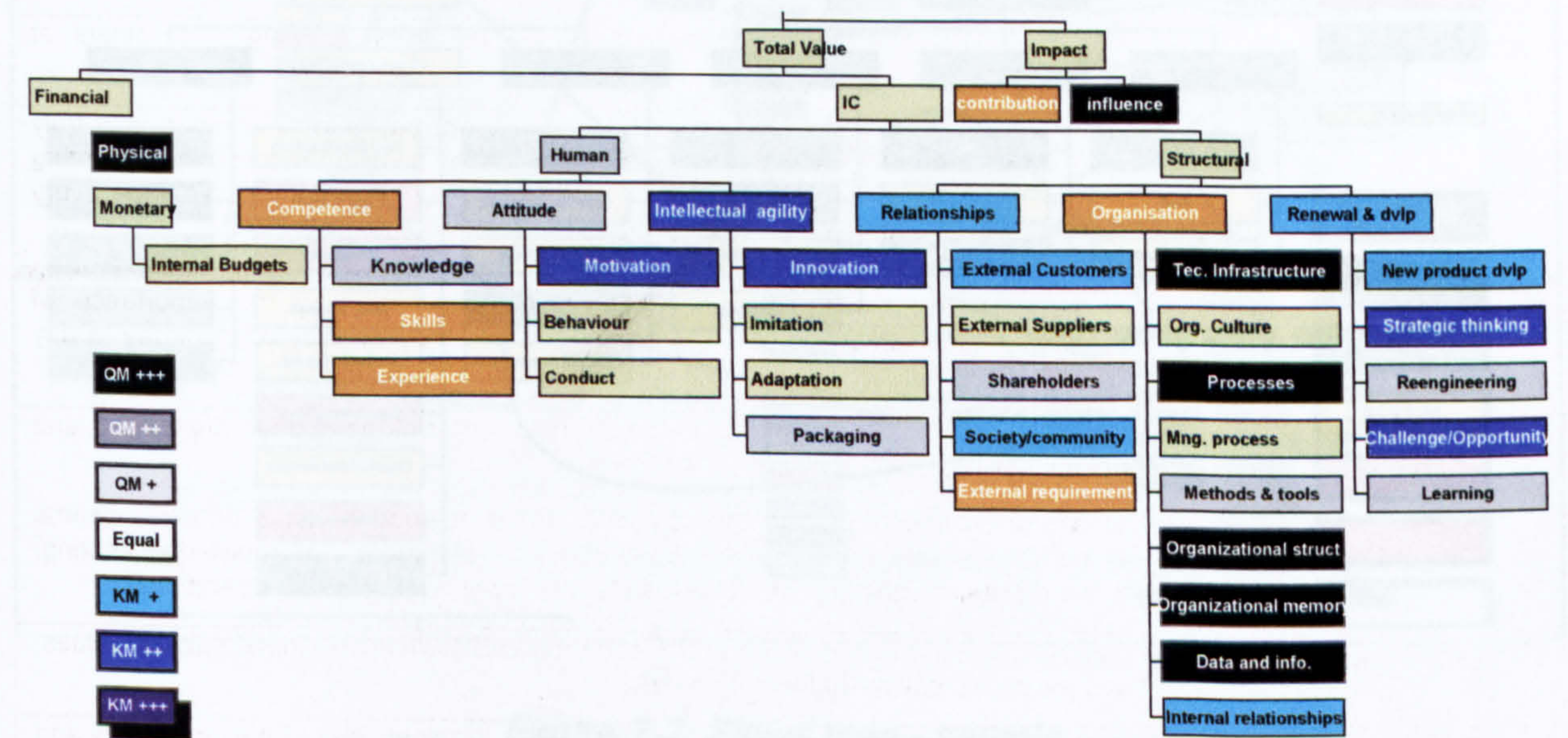


Figure 7-5 The IC Gap map – sample



7.8.5 Tools 4: The aggregated maps

What:	The aggregated IC maps represents the IC of a general-community (consisting of a group of similar communities) based on the accumulated perceptions of all interviewees.
Why: Objectives	The map supports the researcher in its attempt to generalise the findings from the maps of specific communities
How:	<p>The findings of all specific maps are digitised into an electronic data sheet (MS Excel). The average IC scores are calculated automatically, and then re-converted by the researcher into colours and digitised into an IC map, using the MS-Excel organisational chart tool.</p> <p>Here, since the aggregation and averaging reduces the extremes on both ends, a more subtle scale is used than in the case of the map of a specific community. The scores are:</p> <ul style="list-style-type: none"><li>Dark Green (3.5-4.0: Excellent)</li><li>Green (3.0-3.5: Very good)</li><li>Light green (2.6-.3.0: Good performance)</li><li>Yellow (2.2-2.6: Fair)</li><li>Pink (1.8-2.2: Poor)</li><li>Red (1.0- 1.8: Very poor)</li></ul>
When	The map is completed after all interviews are completed, as part of the analysis.

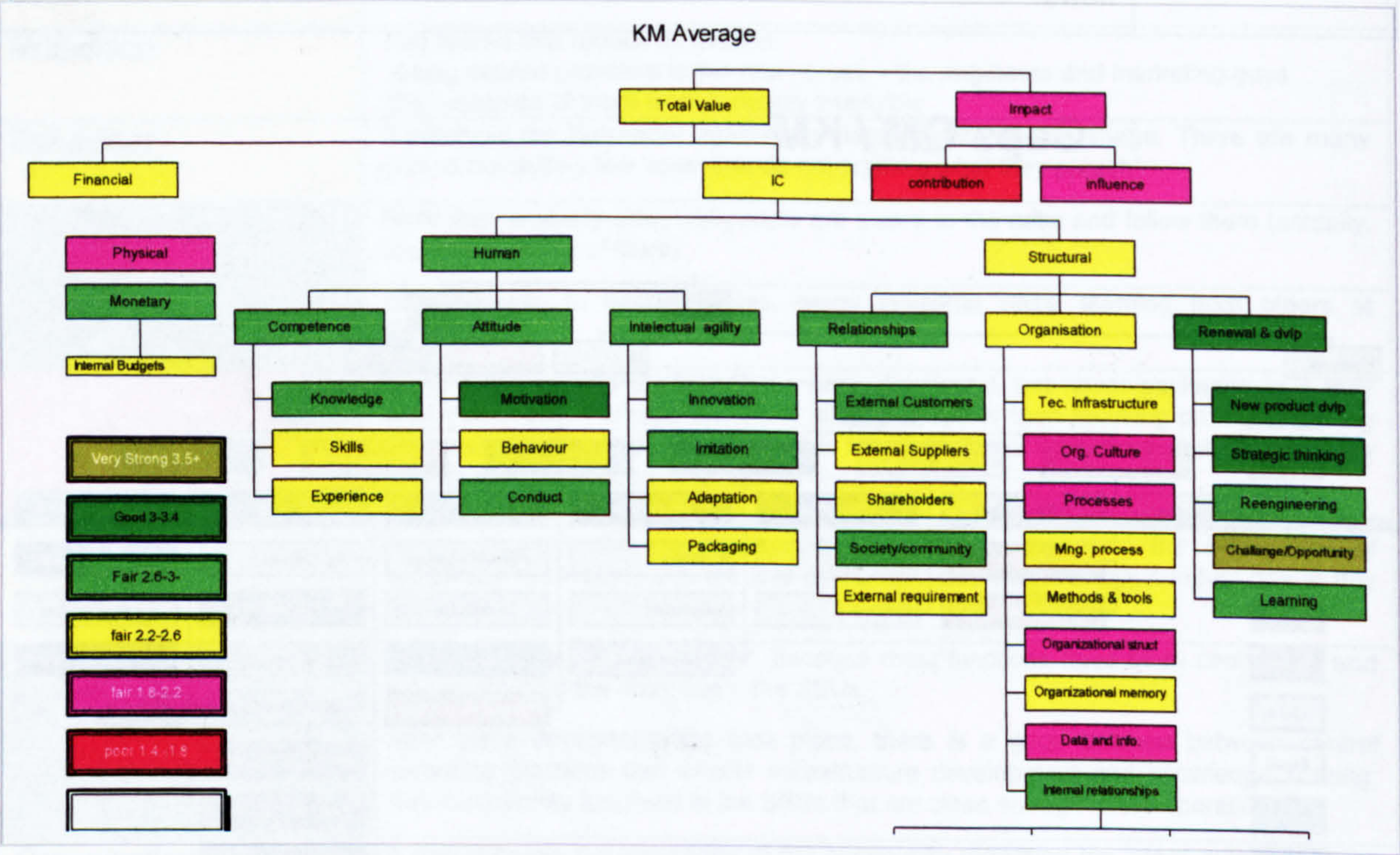


Figure 7-6: The aggregated IC map - example



7.8.6 Tool 5: The Flows map

What: Description	The map represents and visualises potential IC flows that were identified by the interviewees.
Why: Objectives	Visualisation of IC flows enables the interviewee and interviewer to have a focused discussion about co-operation patterns between professional communities. Like the other maps, it is a communication and discussion-enhancing tool.
How:	<div><div><div><div><input type="checkbox"/></div><div>The interviewee looks at the completed IC maps of the QM and KM communities.</div></div><div><div><input type="checkbox"/></div><div>The interviewee uses the information in the maps (e.g. large gaps of a specific IC assets between the two communities) as well his or her own background knowledge and insights revealed during the interview, in order to identify potential flows. The identification process involves a conversation between the interviewee and interviewer.</div></div><div><div><input type="checkbox"/></div><div>The interviewee visualises those flows as arrows.</div></div><div><div><input type="checkbox"/></div><div>After the interview, the researcher records the flows into a computerised form, and adds the comments discussed during the interview on specific flows (Justifications etc.).</div></div></div><div>The researcher does a similar process, when creating the IC flows map for the general communities.</div></div>
When	The individual map is done for a pair of specific communities during each interview. The map for the general-communities is done after completion of all interviews, as the final part of the analysis.

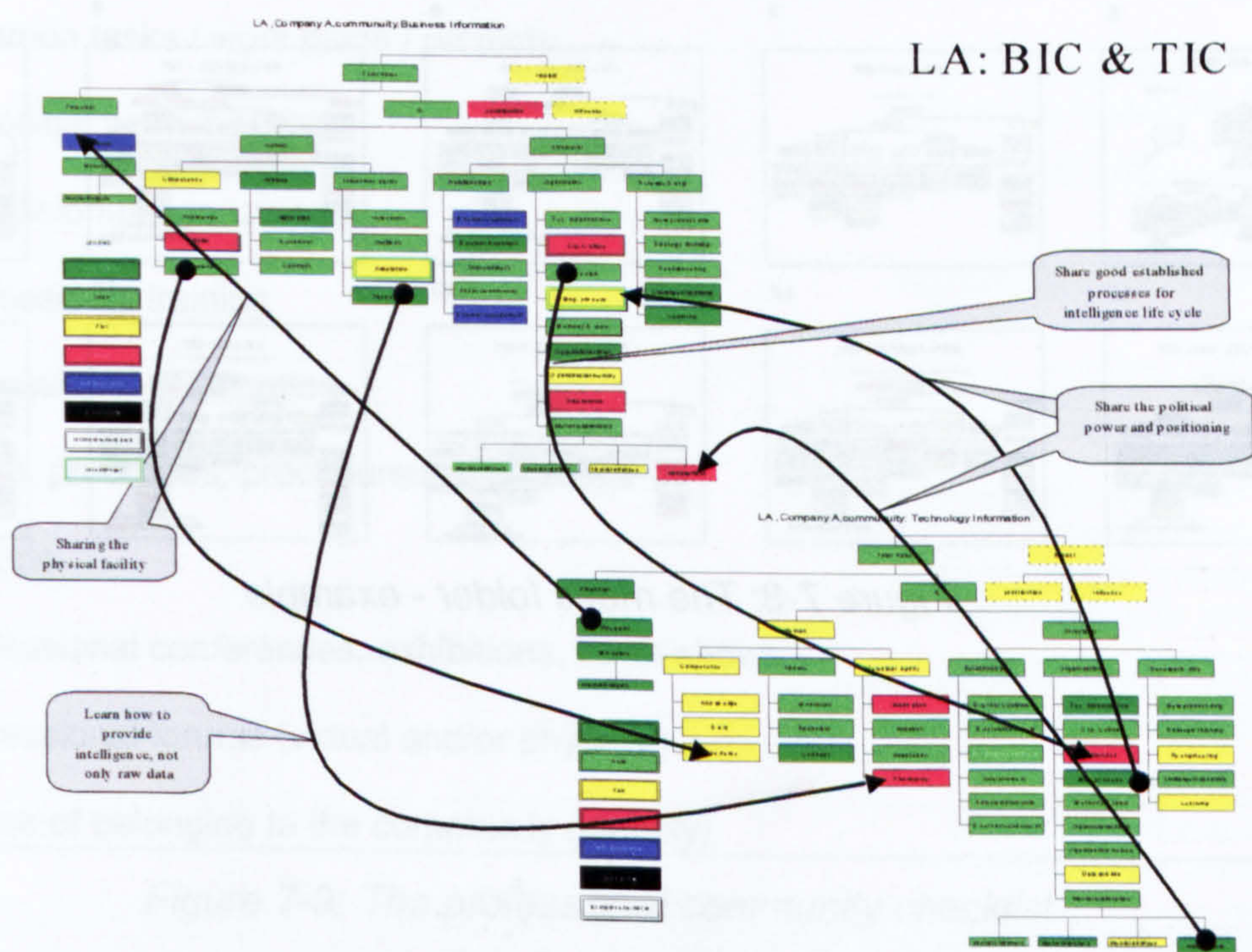


Figure 7-7: Flows map - sample



7.8.7 Tool 6: The maps folder

What: Description	The folder is a convenient tool to see a selected set of IC maps together or to browse between maps.
Why: Objectives	The presentation of several maps at a single view, as well as the fast flipping of maps, enable the user to get more insights on ICs patterns, differences between communities as well as common characteristics of ICs of different communities.
How:	The folder uses the viewing features of MS-PowerPoint. Every map is located on one slide, and the "slide sorter view" provides the multiple-maps-view-at-a-glance functionality. The "presentation show" feature provides the fast flipping functionality.
When	The folder is populated once all maps are coded.  Can be used at any stage during the analysis.

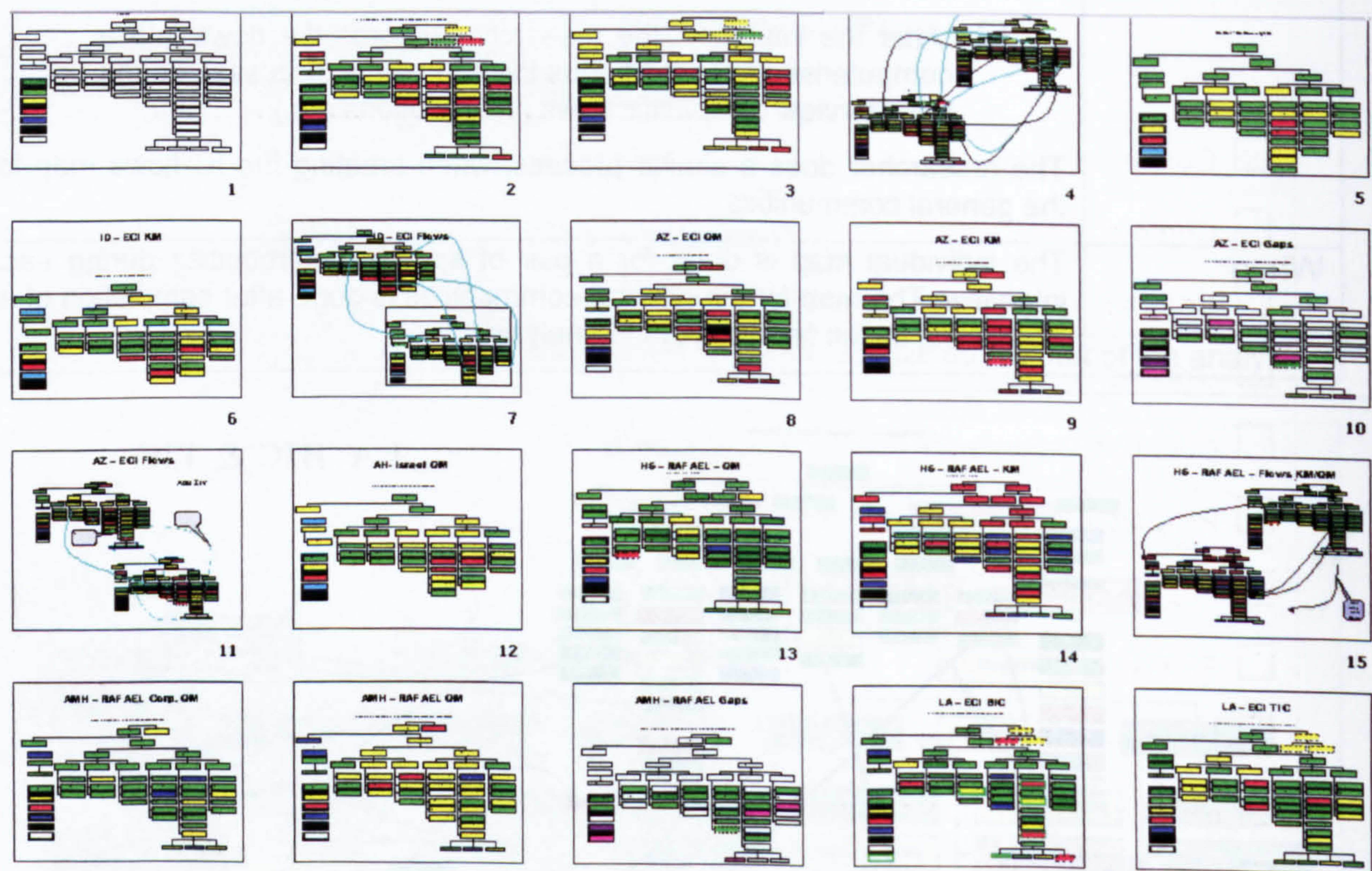


Figure 7-8: The maps folder - example



### 7.8.8 Tool 7: The community checklist

What: Description	A checklist to help identify and define the professional communities that are the subject of the interview.
Why: Objectives	After the first two interviews it became apparent that the interviewees face difficulties in identifying the professional communities they belong to/ work with. The checklist can help the user identify such communities.
How:	The checklist is presented to the interviewee when he or she is attempting to identify and define the communities to be discussed in the interview. These may be communities proposed by the interviewer or the interviewee. The interviewee does not complete the checklist and tick the features that are fulfilled by a group of people that is a candidate to be defined as a community. Rather, the list is a reference to look at and consider while discussing the candidate groups with the interviewer. A group of people who fulfil many of the criteria is considered, for the interview purpose, as a professional community.
When	Used at the initial phase of the interview.

Professional Community Checklist

☐ Common objectives

☐ Common professional discipline

☐ Common professional language

☐ Common roots

☐ Common tasks / work plans / projects

☐ Periodical work meetings

☐ Professional magazines

☐ Professional training

☐ Professional certification

☐ Rules, processes, procedures, regulations

☐ Awards

☐ Professional conferences, exhibitions, trade shows

☐ Professional forums (virtual and/or physical)

☐ Sense of belonging to the community (identity)

Figure 7-9: The professional community checklist



7.8.9 The feedback questionnaire

What: Description	The feedback questionnaire
Why: Objectives	<p>The feedback on the different planned functionality of the IC mapping methodology is essential to assessing its usability, adding insights about the methodological contribution to the research.</p> <p>The feedback will also serve in the efforts to improve the methodology, for either research or community improvement goals.</p>
How:	<p>At the end of the interview, the interviewee is asked to fill the questionnaire. Once completed, the interviewee and interviewer discuss the attitudes of the interviewee and possible improvements to the methodology. These are documented on the form.</p> <p>After completion of all interviews, the data is analysed, and qualitative comments are summarised.</p>
When	<p>Data collection - The questionnaire is filled at the end of each interview.</p> <p>Analysis - After completion of all interviews.</p>

Potential use	Strongly disagree	Slightly disagree	Agree	Strongly agree
Deeper Understanding of strengths of the community				
Deeper Understanding of weaknesses of the community				
Deeper Understanding of the big picture				
Deeper Understanding of the concept of Intellectual Capital				
Articulate existing thoughts, ideas and opinions				
Identify hi-priority improvement areas (where to focus efforts)				
Identify potential flows of IC between communities				
Help to communicate the above understanding to other stakeholders (management, shareholders, colleagues, employee's etc.)				
Forward messages and educate all stakeholders as to the desired values				
Triggers practical actions to enhance the community's IC				
Comments and proposed improvements: <hr/>				

Figure 7-10: The feedback questionnaire



## 7.9 Usage scenarios

The IC mapping tool can be used in multiple ways. The author categorised them into four scenarios, that can be represented in the following two by two matrix:

		Scope	
		One community	Pair of communities
Used by	An individual	I	II
	A group	III	IV

Table 7-5: Usage Scenario

The author has applied only scenarios I and II (highlighted) - all of the uses were based on interviews of individuals, and while in most a pair of communities (usually QM and KM) were covered, in a few only one community was discussed.

However, alternative scenarios would involve the implementation of the methodology in a group discussion e.g. focus group (quadrants III and/or IV).

This was not applied due to the required resources – a group discussion that covers the full IC distinction tree would require very long meetings- a full-scale workshop of about 4-6 hours. This would be impossible with the type of professionals whose opinions the author wanted to explore.



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## 7.10 Risks and weaknesses

Several risks were identified for the implementation of the IC methodology tool and were foreseen before the beginning of the validation phase. Other weaknesses discovered at the beta phase (after two interviews).

The following table presents the risks, the ways the author planned to overcome them, and what actually happened during the validation phase.

Risk	Solutions	What actually happened
<b>Selected IC model (the Roos distinction tree) do not match professional communities</b>	Several leaves were added before the validation phase, and a few others added after the beta phase.	Most constructs of the tree were found relevant by the interviewees, and they marked only few as "not-relevant".
<b>The process is complex (in 120 minutes, several tools, tables and maps are used)</b>	A clear sequential structure of the interview was planned – and the interviewer explained the objectives of each tool.	<p>No indications of problems relating to this issue in the face-to-face interviews. However, in one of the virtual interviews (out of two) the interviewee complained that the logic and tasks were not clear, and a telephone interview which complemented the procedure with this person.</p> <p>In about half of the interviews, the process took 20-40 minutes more than the planned time. This can be explained by the complexity of the procedure as well as by the interest of the interviewee to deepen the conversation on some aspects of the issue.</p>
<b>The meaning of the constructs of IC are not clear to people who are not familiar with the concept</b>	A dictionary of ICs, with short and clear definitions of each, was prepared and used during the interview as a reference.	In some cases the definitions were not sufficient, and the interviewer enhanced them by examples, when the interviewee found them unclear.
<b>The interviewee will find it difficult to score specific IC assets</b>	<p>A bottom-up procedure was applied, so the interviewee could base decisions of better IC assets on the assessment of lower-level ones.</p> <p>The interviewees were offered to begin the assessment exercise with the community and branches (main IC categories) they are more comfortable with, and only then remove the ones that are less clear.</p>	<p>In the beta test, a range of a three score scale was found to be restricting by the interviewees. Therefore the scale was changed to a four-score scale.</p> <p>As the mapping progressed, each interviewee progressed, and became faster. The mapping of the second IC map was faster than the 1<sup>st</sup> one. This shows that a quick learning process took place during the interview, and a technical IC mapping skill was acquired.</p>



<b>The identification and definition of the explored community is not clear</b>	The community checklist was designed and implemented after the beta-phase, to help the interviewee arrive at a definition which is clear to him or her	In all cases, the interviewee generated a clear definition of the explored communities. In some case, this required a short conversation.
<b>The results from a small group of interviewees will not represent the general situation.</b>	A careful selection of interviewees, based on pre-defined criteria, was planned to ensure both the diversity and quality of contributions.	<p>The group of professional who were interviewed was indeed diverse, representing professionals from several countries, representing many perspectives (academics, communities' leaders, service suppliers etc.)</p> <p>The accumulated map of each general-community revealed some general patterns. The statistical analysis of the accumulated results showed that most of these patterns are statistically significant.</p>
<b>The results can be biased by the attitudes of the researcher (who performed the role of the interviewer) toward the subject</b>	<p>The procedure included, intentionally, several mini conversations between the interviewee and the researcher. In order to minimise bias; there is a mix of such interactions and maps filled by the interviewee.</p> <p>The awareness of the researcher to this risk, and attempts to refrain from influencing the interviewee, are also contributing to the reduction of the risk.</p>	<p>It is hard to assess to what extent the results are biased by the interactive interview process.</p> <p>It is felt that the richness of the information achieved through the interviewee / researcher interaction compensates for such bias.</p>

*Table 7-6: Weaknesses and solutions – the IC mapping methodology*

### 7.11 Methodology validation

The author used several data collection techniques to analyse the utility and validity of the methodology:

- ☐ Interview feedback questionnaire
- ☐ Interviewees' comments
- ☐ Researcher's Observation
- ☐ Statistical validation of the findings represented by the IC maps

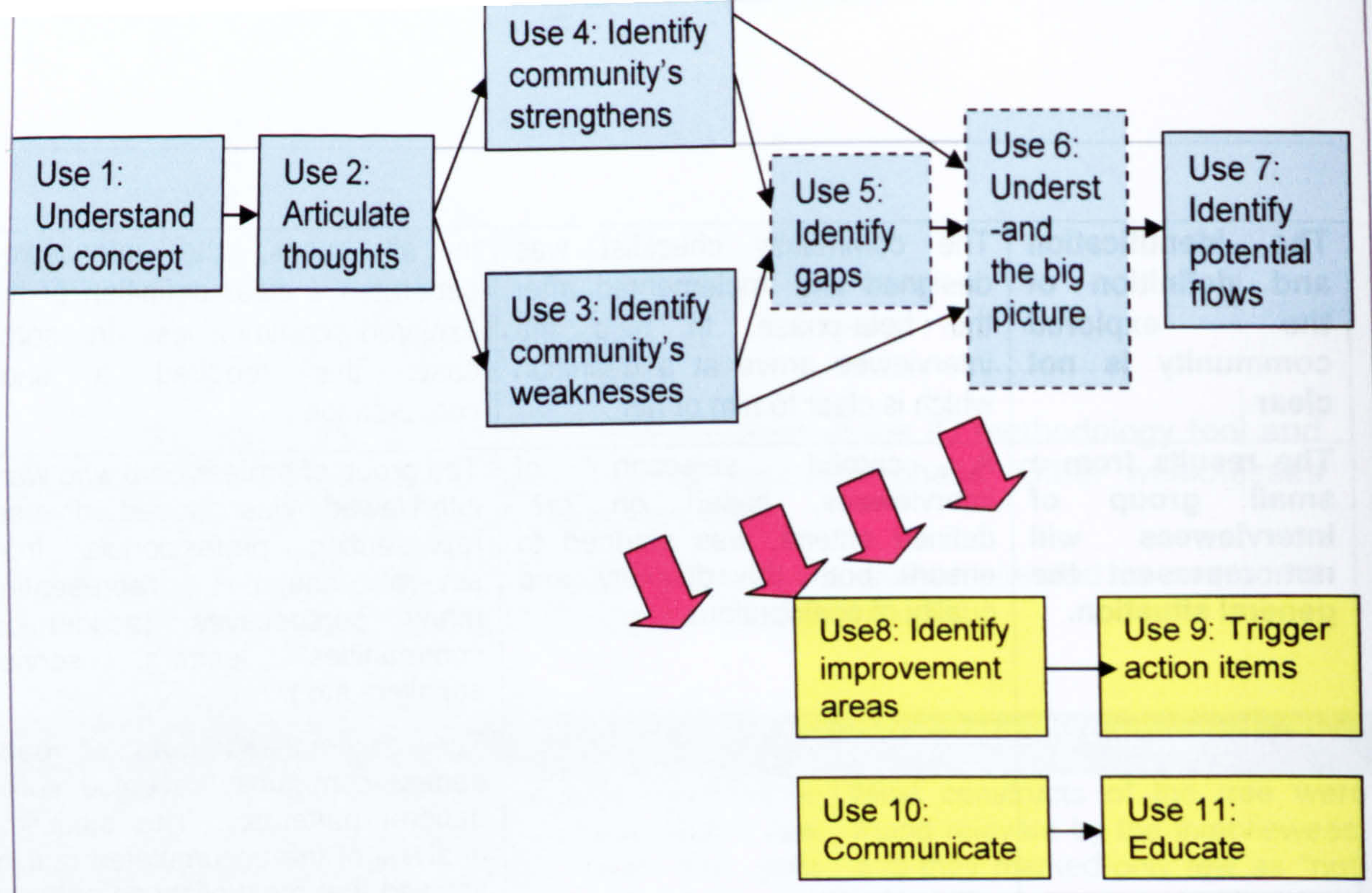
#### 7.11.1 Questionnaire findings

The questionnaire aimed to assess the usability of the methodology, as perceived by the interviewees who experimented with it. A detailed description of the questionnaire is given above.

In general, the methodology was perceived as useful – average scoring was 3.34 (on a scale of 1-4, where:

- ☐ Strongly disagree (that the methodology helps to achieve objectives described in the questionnaire)





- ☐ Slightly disagree
- ☐ Agree
- ☐ Strongly agree

The interviewees thought that the methodology was useful in achieving all ten potential uses – the scoring ranged between 3.13 and 3.50. The methodology was perceived as particularly useful in understanding the weaknesses and strengths of professional communities and as a communication tool (3.50).

The two interviewees who were interviewed using e-mail and telephone perceived the methodology as less useful than the other interviewees, who participated in the full face-to-face interview procedure. The average scores for them were only

Interviewee NR, responding to the e-mail procedure: score = 1.9.

Interviewee NR, responding to the telephone procedure, which completed the e-mail procedure, score = 2.4.

Interviewee SH, responding to the telephone procedure, score = 2.8.

The questionnaire included one question about each of the 10 uses. The following flowchart shows these uses and the logical relationships between them. For completeness, the author added to this chart one use that was not included in the questionnaire: identification of gaps between communities.

*Figure 7-11: Inter-linked uses of the methodology*

The following table shows the average scoring across all interviewees (1-strongly disagree, 4 – strongly agree)



Usage: the methodology helps to...	Average
Understand Strengths	3.50
Understand Weaknesses	3.50
Communication	3.50
Understand Big Picture	3.38
Articulate thoughts	3.38
Identify potential flows	3.29
Understand IC concept	3.25
Identify improvement areas	3.25
Trigger practical actions	3.25
Educate	3.13
Average	3.34

Table  
 7-7: Methodology usability: questionnaire findings  
 (average)

The following graph represents the average scoring and the individual perceptions of each interviewee who completed the questionnaire:

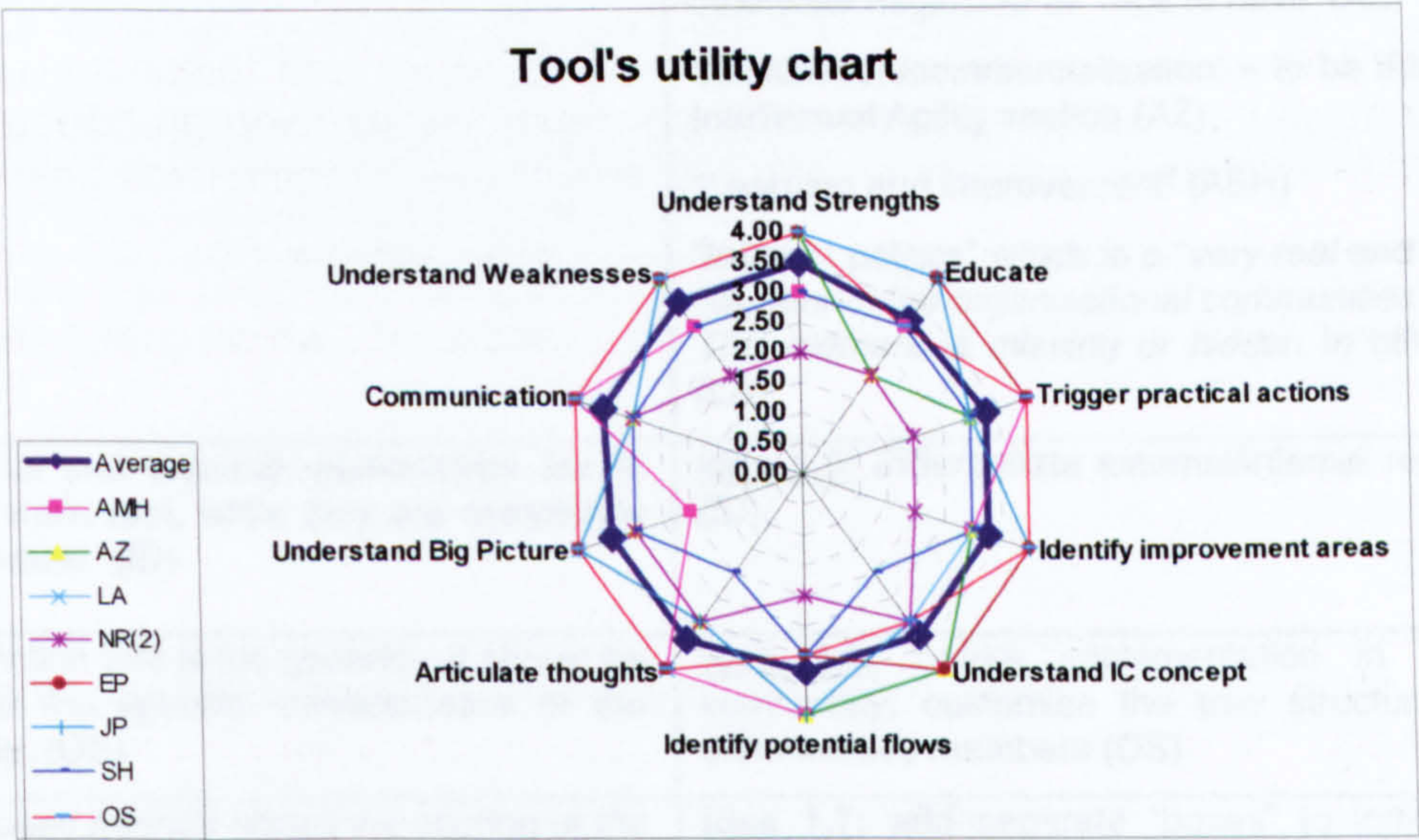


Figure 7-12: the questionnaire results, by interviewee

### 7.11.2 Consolidation of interviewees' feedback

Throughout each interview, and particularly in the feedback phase at the end of the interview, the interviewees expressed their feedback about the methodology, and their comments were recorded. The author has categorised these comments into four categories: weaknesses and improvement ideas, strengths, potential usage scenarios.

#### 7.11.2.1 Weaknesses and improvement ideas

The following table lists the weaknesses identified by the interviewees and 14 solutions they have suggested. For some problems no solutions were suggested.



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Most comments referred to structure of the tree and difficulties to decide how to score each root. The comments were categorised into five groups:

- ☐ Group 1: The structure and composition of the IC tree
- ☐ Group 2: Deciding “which colour” – scoring
- ☐ Group 3: Limited representation of the data
- ☐ Group 4: Defining the community
- ☐ Group 5: Other weaknesses



Group 1: The structure and composition of the IC tree

Weakness	Improvement ideas suggested by interviewees
<p>ID was not convinced whether all items in the IC map are important or even relevant to the performance of the organisation (ID)</p> <p>AW thought that the IC tree is more suitable for formal organisations than informal communities: <i>"I like the idea of doing this, but found that you need a different set of IC measures to do it most effectively for communities, especially communities that aren't completely contained within a parent organisation. It doesn't have to be a totally different set of terms, but I would eliminate certain terms that don't fit, add others that fit only communities and not organisations, and change the glossary to reflect the application of these terms specifically to communities rather than organisations"</i></p>	<p><b>Idea 1.1:</b> ID suggested to apply a scientific empirical approach to this question: <i>"Ideally, I would compare the performance of two organisations or communities with one item with different values (e.g. red in community 1 and green in community 2) while the other parameters are identical. The idea is to use the Design Of Experiment techniques in order to identify the more important IC items".</i> (ID)</p> <p>Idea 1.2: customise the IC distinction tree to informal communities (the author did add several roots which are specific to communities, but tried to maintain the tree similar to the original one for reason explained before). However, perhaps more customisation is needed.</p>
<p>The tool does not provide a well-structured analysis of the organisational culture IC element.</p>	<p><b>Idea 1.3:</b> integrate an "Argyris style" organisational culture module. AMH assumes that the QM community is a I,A community, while the KM community is E,I.<sup>13</sup></p>
<p>Some issues are not covered by the IC distinction tree</p>	<p><b>Idea 1.4:</b> Add roots to the model:</p> <p>External forces, as an enhancer of the capacity of corporate functions to implement things which are otherwise neglected as 'nice to have' (AZ)</p> <p>'Exploitation/commercialisation' – to be added to the Intellectual Agility section (AZ)</p> <p>"Learning and improvement" (ABH)</p> <p>"Internal politics" which is a <i>"very real and significant element of the organisational communities operation. This element is missing or hidden in other leaves"</i> (LA)</p>
<p>The internal and external relationships are in the same main root, while they are completely different issues (ID)</p>	<p><b>Idea 1.5:</b> Differentiate external/internal relationships (ID).</p>
<p>The Distinction tree is too generic – it should be tailored to the specific characteristics of the community. (OS)</p>	<p><b>Idea 1.6:</b> before implementation in a specific community, customise the tree structure with the communities members (OS)</p>
<p>The proposed method allows the scoring of the overall impact of the community, This is too general. (LA)</p>	<p><b>Idea 1.7:</b> add separate "boxes" to indicate actual impact of specific IC items (LA).</p>

Table 7-8: Weaknesses and proposed solutions and improvements: group 1

<sup>13</sup> Argyris (1957) defines four main culture types: A – bureaucracy, procedures, systems, E- Entrepreneurship, I – Integration, people focus, group dynamics, P – productive, results oriented.



## Group 2: Deciding “which colour” – scoring

Weakness	Improvement ideas suggested by interviewees
The need to aggregate: In some cases one IC item was red, and another one in the same branch was green. Any upward aggregate would hinder important information.	NA
The scale has not enough grades, and its resolution too difficult. For example, “it is difficult to decided if it is a ‘red’ or a ‘yellow’” (AZ, AH)	<b>Idea 2.1:</b> Add an additional colour to the scale (AZ)
There are interdependencies between IC leaves (LA)	NA
The subjectivity of the map completion process reduces its value (NR)	<b>Idea 2.2:</b> “Define a process on how to get the roots’ colours (a real holistic, integrated, coherent process); You need to have performance measures for each cell, in fact this is a kind of performance measurement system, however so far some integral components are missing-like measure” (NR)
The need to average and represent by one grade (one colour) both the capabilities and the actual impact leads to loss of resolution. For example, item X may be Green as to capability, but Red as to the way this capability is actually exercised for the benefit of the company (ID)	NA
Lack of clear criteria for red/yellow/green: AH found it difficult to set colour when there are not explicit criteria (ABH).	<b>Idea 2.3:</b> pre-defined criteria for the scoring. For example: set criteria based on the achievement level of predefined goals (e.g. green = 70%+ goals achieved, Yellow=40-70% achieved, Red=0-40% goals achieved). (ABH)
Not sure what the scoring reference is (score according to Israeli best practices, to the global best practices, to ideal To-Be situation?) (LA)  Similarly comments:  “Not sure how to score if the actual value is low but the potential to be good in this asset is high” (AZ)  “I applied very high standards when scoring the IC items. If I would compare our situation to other companies, probably the map would have looked even better” (LA).	NA
Difficult to decide score when most members perform in a certain level, but few members have extremely low or high performance:  “The overall good performance is degraded by few low performance members f the community”. The performance of the members is very heterogeneous” (LA).  Similarly: Deciding a colour, while having in mind conflicting examples (AZ)	<b>Idea 2.4:</b> As a response, the interviewer suggested the interviewee (LA) to refer to the average members, not to the extremes.
Regarding each item, ID had to make an average across heterogeneous populations. In extreme cases, a specific group of employees is Green in item X, while item Y is Red (ID).	NA

Table 7-9: Weaknesses and proposed solutions and improvements: groups 1



Group 3-5: other issues

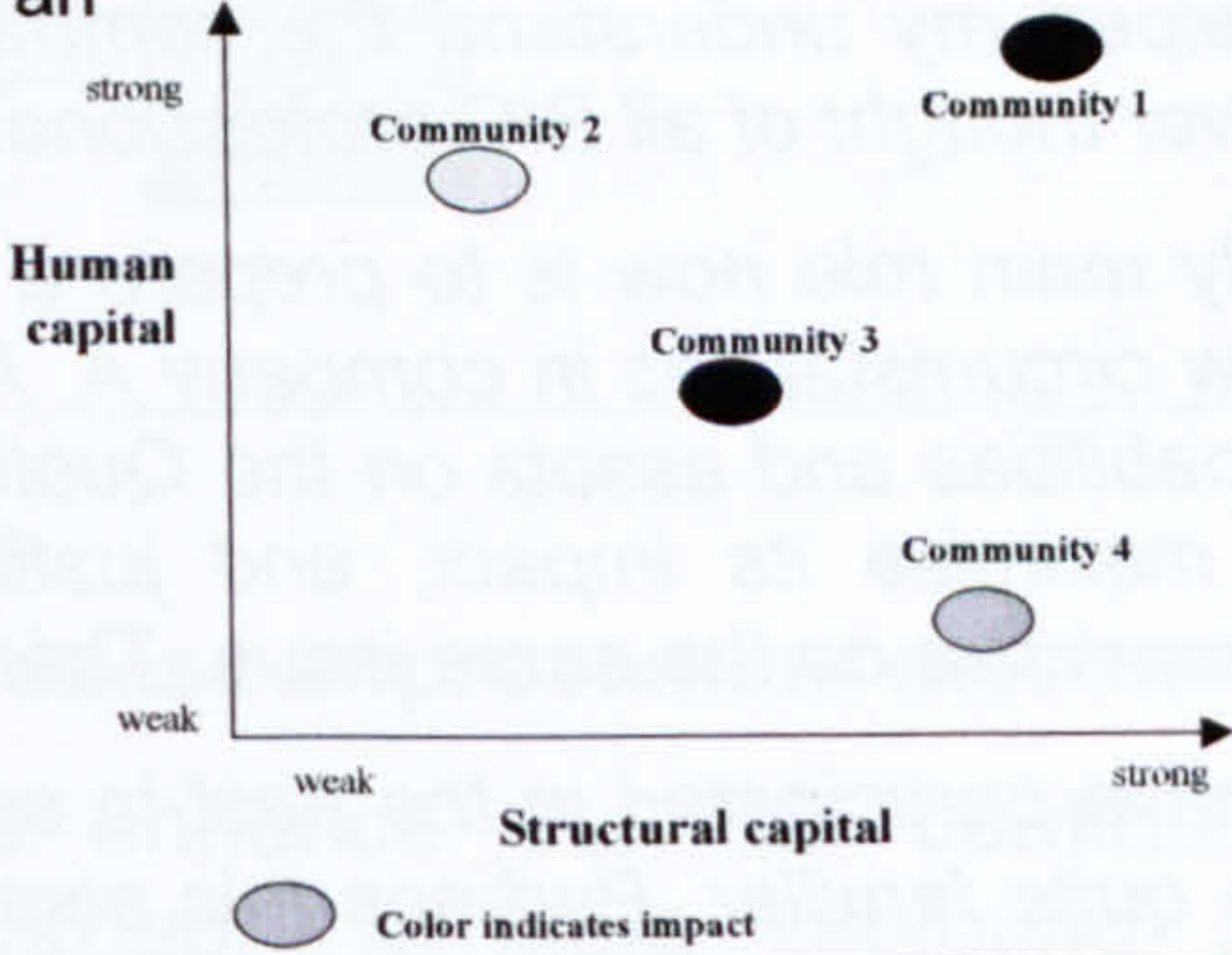
Weakness	Improvement ideas suggested by interviewees
<b>Group 3: Limited representation of the data</b>	
The IC map is very information rich, but the overall picture is hidden behind the detail. There is a need to provide also an overall picture that integrates all details into one clear message (AH).	<b>Idea 3.1:</b> represent the IC information in a 2 dimensional map. AMH sketched the following idea as an example: 
Static map: Trends are not represented: the map shows only current situation (ABH)	<b>Idea 3.2:</b> add a graphic indicator for the trend, next to the current situation that is indicated by colour (ABH).
<b>4. Defining the community</b>	
"The question what do you mean by community is still a major inhibitor for smooth completing" (NR).	<b>Idea 4.1:</b> Provide better definition of professional communities (NR)
The paper based maps limit the possibilities to explore the data captured in them (AH)	<b>Idea 4.2:</b> implement the IC maps in the organisational EIS (Executive Information System). A more sophisticated interface that allows the user to navigate, compare, analyse and explore the data in multiple ways. (AH)
<b>5. Other weaknesses</b>	
IC assessments can be misused. "This happened in 2000 in my company, when the bonus system was linked to IC assessment, and several managers have manipulated it" (AH).	NA
The focus on flows from "green to red" is limiting the potential scope (AH).	<b>Idea 5.1:</b> when analysing the maps of two adjacent communities, consider not only flows from strong to weak, but also co-operation on joining forces to improve together common poor areas (AH)

Table 7-10: Weaknesses and proposed solutions and improvements: groups 3-5

7.11.2.2 Strengths and benefits:

The perceptions of the interviewees about the benefits of the tool are already highlighted in their responses to the questionnaire.

In this section the author triangulates this structured data with the comments discussed during the interviews. The author uses quotes, in order to retain the original intentions (but quotes in Hebrew were translated). Most comments referred to the ability of the methodology to help the interviewees better understand and articulate the situation of their community.

Understanding and analysing the situation

"The tool is useful to analyse situation with this checklist"

"Raises questions and externalise thoughts regarding the strengths and weaknesses of the community. I did not discover dramatic new insights, but it surly helped me understand better ideas and concerns I was already aware off"



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*"Provides realistic picture of the BIC (business Information Centre) group situation"*

*"The maps helped me to think in a systematic and focused way on things which I thought of before in less structured way. It is an opportunity for a focused, concentrated thinking around BIC strategy".*

*"Eye opener, which foster existing ideas and thoughts, and help to generate new ideas"*

*"Helped my understand the communities which I have been working with. Some far I never thought of all BIC professionals in the company as a community".*

*"My main role now is to prepare a survival/business plan for the QM department in the new circumstances in company A. Actually, I am thinking every day on how to match the capabilities and assets on the Quality community to the needs of the company, and how to maximise its impact, and justify its existence. The IC map provides a different perspective on the same issue. Therefore, and helped me understand better the situation"*

*"I have participated in the past in several IC workshops, so the concept and terminology are quite familiar. Perhaps this also explained why relatively the IC map did not provide many new insights. The perspective of IC is already known too me. The only way to innovate is by looking at a situation/problem from a totally different point of view. However, I still think that the IC map can have value to other people, less experienced and self-aware than me"*

### **Communication**

*"The tool helps with communication with external and internal stakeholders".*

Structured presentation of a message: *"would help me to present effectively some of my ideas and messages regarding the role of QM to the company top management".*

### **Triggers improvement actions**

*"Correctly implemented, the tool may trigger improvement activity"*

### **Identify synergies between communities**

*"The tool helped me realise some strengths of TIC, which so far I considered as an inferior community. There are things we can learn from them".*

## **7.11.2.3 Additional Usage scenarios:**

Several interviewees suggested alternative usage scenarios, which are related to their jobs, professional backgrounds and professional basic assumptions. It is interesting to note that all scenarios did not refer to the idea of IC flows between communities, but on internal improvements.

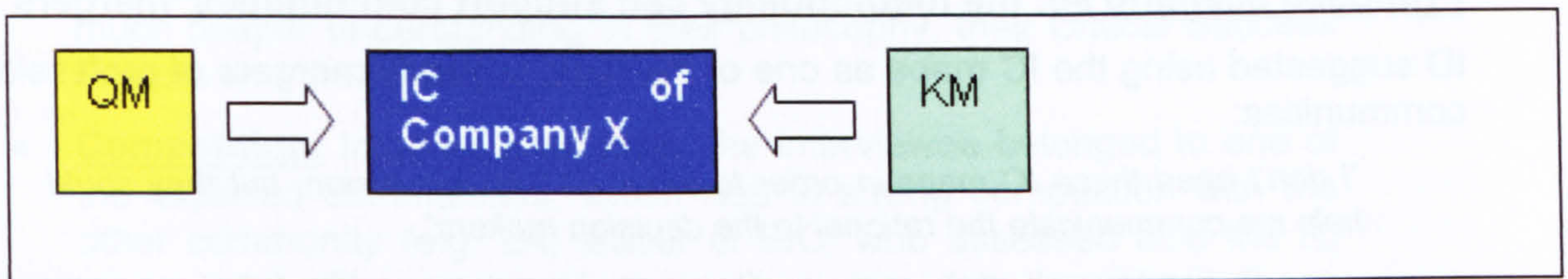
### **Proposed scenario #1: focus on the organisation, not on its professional communities:**

ID suggested completely changing the focus of the assessment. *"The IC of a functional/professional community is not an aim to itself. The main objective is to maximise the market value of the organisation".* Instead of focusing on the IC of the professional organisational communities, it would be more beneficial to ask how both QM and KM communities can contribute to enhance the IC of the organisation. ID suggested the following process:

1. Map the IC of the company
2. Identify how the QM & KM communities can and do contribute to the company's IC
3. Identify overlaps and potential synergies between the communities.



This perspective is derived from one of the most profound basics of the Quality movement: focus on the customer (here the company as a customer, and professional functions/communities as suppliers).



### **Proposed scenario #2: the methodology as process improvement mechanism**

AZ suggested using the concept of IC to enhance the QM community capabilities, provided that first *"we go through a more profound self assessment, and only then bring in a consultant to help us realise systematically the opportunities discovered by the map"*.

*"I would implement in a two phase program:*

- ☐ *first all community key players run through a self assessment exercise*
- ☐ *and then a facilitated group discussion, filling and consensus making around one map"*

*"I would focus initial attention on the red areas; quickly identify which are the important 'reds'. There is no need to focus efforts on less critical 'reds'. The discussion on the weaknesses of the community must lead into an actionable improvement plan, if we want to extract value out of it"*

### **Proposed scenario #3: the methodology as a part of a systematic improvement process.**

ABH, the president of the Israel Society for Quality association, thought that that IC mapping could be used as a improvement tool for the association, serving as a **"Mirror"**, main role: to help in identifying improvement opportunities.

AH insisted that the IC map must be used as a self-assessment tool. *"I don't think that it would be helpful if an external consultant would assess the community's situation and then present it to us"*. He suggested that the IC maps of several quality communities (including the one conducted with him) would be presented to the management board of the Israel Society for Quality (ISQ). *"The differences between different Quality Communities would trigger a strategic discussion on the future way of ISQ"*. Then, at a workshop with the ISQ management board members, they will assess the Association's IC and elaborate an improvement plan.

AH commented that the methodology can be implemented alongside other tools already used by ISQ, *"in order to bring an additional perspective"*

### **Proposed scenario #4: the methodology can support community building**

JP thought that the methodology could be used at the very early phase of community building by the small core group that starts the community. It can help the team in defining the community objectives, activities, priorities, required assets etc. Similarly,



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it can be used after a community exists and operates for some time, and arrive at a phase where more institutionalisation seems appropriate. Finally, once a community is mature, the methodology can be used to assess its effectiveness.

#### **Proposed scenario #5: the methodology can support communities' mergers**

ID suggested using the IC maps as one of the tools to justify mergers of professional communities:

*"I don't need these IC maps in order to arrive at this conclusion, but they could help me communicate the rational to the decision makers".*

#### **7.11.3 Researcher's observations**

After each interview the researcher recorded his observations and perceptions about the interview process:

- **Experienced interviewees**: In most interviews, when the interviewee was more familiar with wide range of assessment tools, the mapping process was faster. However, even in the case of LA who was less familiar with self-assessment tools, the learning curve was fast.
- **Learning**: While filling the map, the level of understanding as to how best to use and fill it was increased (how to best aggregate). Confusion and hesitation at the strategy of the mapping phase was replaced by confident and rapid progress in the second map. This fast learning process was apparent in all interviews.
- **Trigger for rich conversations**: In most interviews, the IC mapping triggered rich conversations about the situation (strengths, weaknesses, improvement areas) of the mapped communities.
- **Which colour?** : Many interviewees faced difficulties in deciding how to score some roots. The multi-dimensionality of IC scores (which combines capabilities, potential and actual performance) and the heterogeneous nature of a community made it a challenging intellectual capital. However, all interviewees found a way to make those scoring decisions, and no one was blocked by the difficulty.
- **Time**: The researcher felt that the limited time of the interview (two hours) limited the depth of analysis and conversation about each community, and many issues could have been discussed more deeply.
- **Colours are not enough**: The explanations and arguments of the interviewees for colour selections for specific IC items enriched the map, made the situation more animated and contributed to a better understanding of the situation.
- **Red**: The few 'Reds' seemed to evoke the most interesting conversations.
- **Familiar place**: The interviewer is familiar with some of the communities covered in the interviews. In his opinion this deepened the conversations and added to the results. The researcher was aware of the risk of influencing the discussion by his personal bias and tried to avoid this risk by using his knowledge not to express opinions but in clarifying questions.
- **Learning opportunity**: Before the interview the researcher knew quite a lot about the Quality community of company B. In the last 5 years,



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as a quality professional in another organisation (TechCom) in the same country, he visited them, benchmarked some of their programs, met with some of their key people and listened to their lectures in quality conferences. However, this two-hour interview gave him a much deeper understanding of their philosophy, their Critical Success Factors and their weaknesses.

- **Competition:** In some interviews, the interviewee belonged to one of the explored communities, which was in strong competition with the other community (e.g. LA, leader of BIC, who assessed also the IC community). The sense of competition was felt throughout those interviews, and possibly impacted the results. Sense of competition was also felt in the case of the AH interview.
- **The personal lens:** In some interviews it was felt that the interviewee was using and imposing a particular lens on the IC map. The personal beliefs of the interviewee strongly influenced the way he/she interpreted and mapped the situation. It showed again that the assessment is very subjective and depends on personal values, basic assumptions and even personality. For example:
  - ❑ One core idea was repeatedly discussed by AZ and highlighted in the maps: The gaps between intentions, slogans, declared values – and the actual behaviour.
  - ❑ ABH is single-minded about the overall theoretical and organisational importance of the concept of “cost of poor quality”. During the interview he tried to interpret the meaning of many IC assets types using this perspective.
  - ❑ In the case of AMH, ‘organising idea’, was the conflict between 2 classical roles of the quality people: auditing, inspecting and controlling on one hand, and helping and offering services on the other hand.

The problem with the application of the ‘personal lens’ is that it reduces the repeatability of the methodology (i.e. two people from the same community may assess in significantly different ways). As one interview commented:

*“Most of the yellow areas refer to my personal belief that.... I think that in this issue my map would differ from the approach of the leader of this community. I think it would be fascinating to ask her to go through this exercise and the compare maps”.*

- **The importance of surprise:** In some interviews the interviewees were surprised to discover the strengths and weaknesses of their communities. In others where the interviewee was more aware of both the situation of his community and model of IC, the “surprise” element was missing, and the interviewee felt that the interview created little value for him (AH).
- **The importance of clear definition:** The clear definition of scope of the assessment, i.e. the community borders, is critical. Even after spending some time discussing and selecting the targeted community, AH faced difficulties several times during the mapping exercise regarding this point. The same difficulty was witnessed in several interviews (ABH, NR, and AZ).



### 7.11.4 Statistical validation

Some of the IC flows ideas are related to the assumed gaps between the level of specific ICs of the QM and KM communities.

The mapping of several communities of each group and aggregation of their ICs scoring created the IC gap maps.

In order to validate the significance of these maps and ensure that they are not random differences, the author applied a statistical test. The test was aimed at answering the question: are the measured differences in the specific IC roots' scores large enough that the author should reject the null hypothesis (that in fact such differences are due to "chance")?

Since the sample was very small and the author mapped only 11 QM communities and 12 KM communities, the author chose the unpaired t-test to test the significant of the differences (gaps) between ICs averages (Kennet, 1998).

The results showed that for most IC asset types, the gaps between the two communities are statistically significant. The author will visit these results in detail in the Chapter 8, which deals with the findings from the IC maps.

The following table shows a portion of the testing table. The gaps between the QM and KM communities that refer to the highlighted IC assets are significant.

	KM	QM	Gap: QM KM	K std	q std	s2	t (min 1.32, Alfa = 10%)
Total value	2.5	3.0	0.5	5.73	7.00	0.58	1.35
Financial	2.5	3.0	0.5	13.50	4.73	0.83	1.11
Physical	2.2	3.0	0.8	6.80	1.50	0.38	2.91
Monetary	2.5	2.9	0.4	17.23	3.91	0.96	0.84
Internal Budgets	2.2	2.7	0.4	16.68	6.53	1.05	0.92
IC	2.5	3.0	0.5	5.73	7.00	0.58	1.35
Human	2.8	2.8	0.0	3.75	4.18	0.36	0.08
Competence	2.6	3.4	0.8	5.06	1.41	0.29	3.23
Knowledge	2.8	3.0	0.2	4.23	3.00	0.33	0.81
Skills	2.6	3.2	0.6	8.42	4.64	0.59	1.74
Experience	2.3	3.4	1.2	4.25	1.41	0.26	5.11
Attitude	.7	2.9	0.2	3.23	4.41	0.35	0.76
Motivation	3.2	2.5	0.7	3.23	8.73	0.54	-2.01

Table 7-11: sample of some of the t-test results



## 7.12 Conclusions

This chapter has described a methodology developed to map the IC of professional communities, and to support the identification of potential flows between them. The author explored the methodology from three viewpoints: the process view, the specific tool view, and the users' perceptions view.

The methodology was specified and designed by the researcher to meet a list of uses – all are related directly to the research questions. The following illustration shows how the planned uses or functionality of the methodology are linked to the research questions.

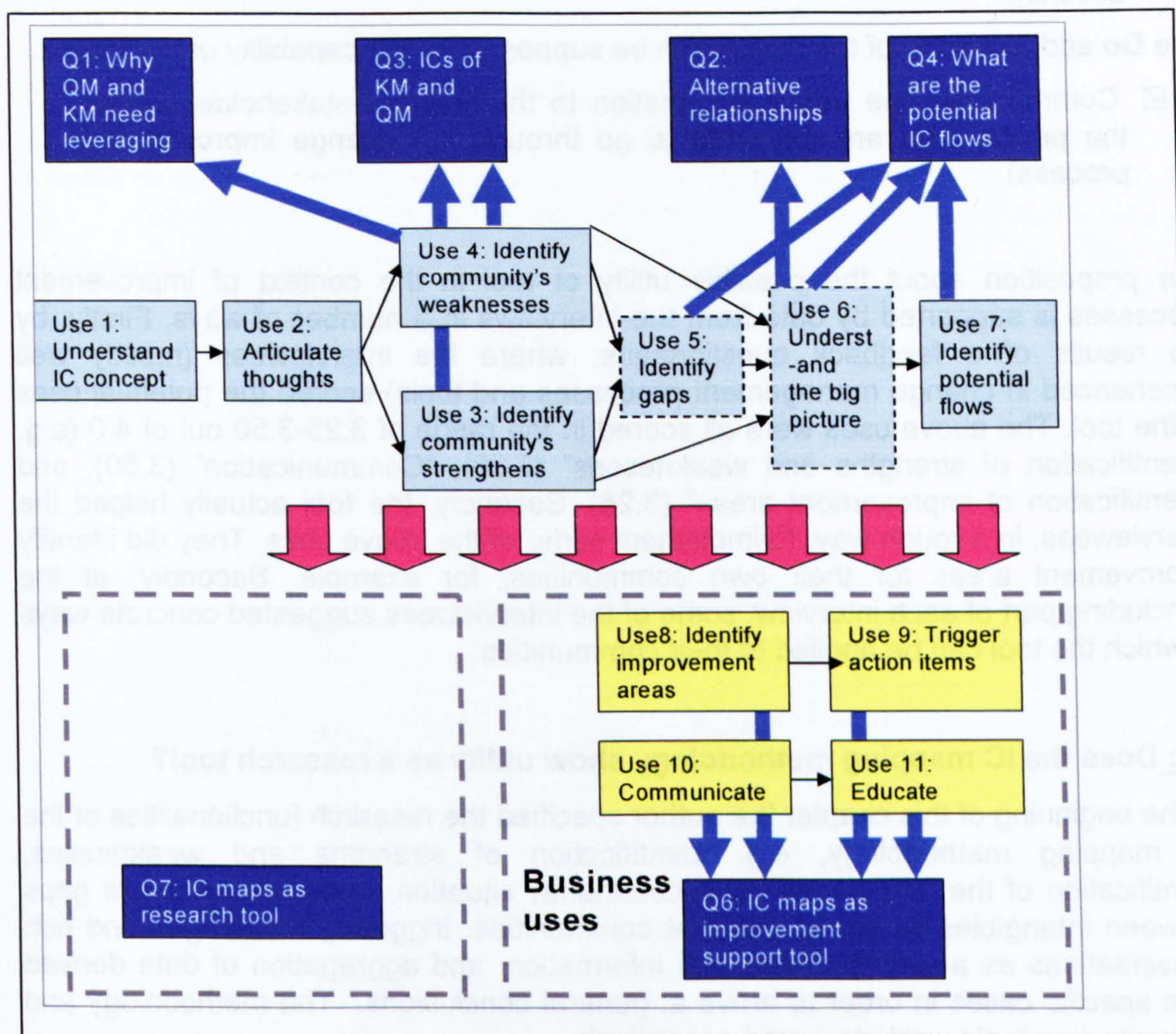


Figure 7-13: Methodology uses and the research questions

Since this tool is focused on the methodology and supporting tools, the author presents here conclusions on the two research questions related to the methodology as a business and research tool:

### **Q6: Does the IC mapping methodology show utility as an improvement tool in the context of professional communities?**

The IC mapping research methodology, which is based on a series of interviews, was designed to also provide value to the interviewees. It was assumed that many of them would be interested in the same set of questions, although with focus on their business implication rather than scientific meaning.



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The author believes that the tool can contribute in a number of ways to the PDCA (Plan Do Check Act) improvement cycle (Greene, 1993).

The **Plan** and **Check** phases can be supported by the tools' ability to:

- ☒ Highlight the situation of an entity (e.g. professional community) by highlighting both the overall picture and specific strengths and weaknesses
- ☒ Expose improvement areas
- ☒ Trigger action items.
- ☒ Identify gaps and potential flows (which are one type of improvement actions).

The **Do** and **Act** parts of the PDCA can be supported by the capability of the tool to:

- ☒ Communicate the above information to the relevant stakeholders (e.g. the people who are expected to go through the change improvement process).

The proposition about the possible utility of tool in the context of improvement processes is supported by data from the interviews in a number of ways. Firstly, by the results of a feedback questionnaire, where the interviewees (mostly well experienced in change management processes and tools) scored the potential uses of the tool. The above uses were all scored in the range of 3.25-3.50 out of 4.0 (e.g. "Identification of strengths and weaknesses" (3.38), "Communication" (3.50), and "Identification of improvement areas" (3.25). Secondly, the tool actually helped the interviewees, in a rough way, to implement some of the above uses. They did identify improvement areas for their own communities, for example. Secondly, at the concluding part of each interview, some of the interviewees suggested concrete ways in which the tool can be applied to their communities.

#### **Q7: Does the IC mapping methodology show utility as a research tool?**

In the beginning of this chapter the author specified the research functionalities of the IC mapping methodology, e.g. identification of strengths and weaknesses, identification of the "big picture" of a community situation, identification of the gaps between intangibles assets of different communities, triggering meaningful and rich conversations as a way to collect rich information, and aggregation of data derived from specific cases in order to arrive at general conclusions. The methodology and its supporting tools were designed accordingly.

The author believes that these functionalities might be useful, not only in the context of his specific exploration of the case of the QM and KM communities, but also as an interesting research tool for researchers of professional communities, or even interactions between other types of organisational entities.

The actual results from applying the IC mapping methodology are presented in the next chapter. This will examine in greater detail the utility of the methodology as a research tool.



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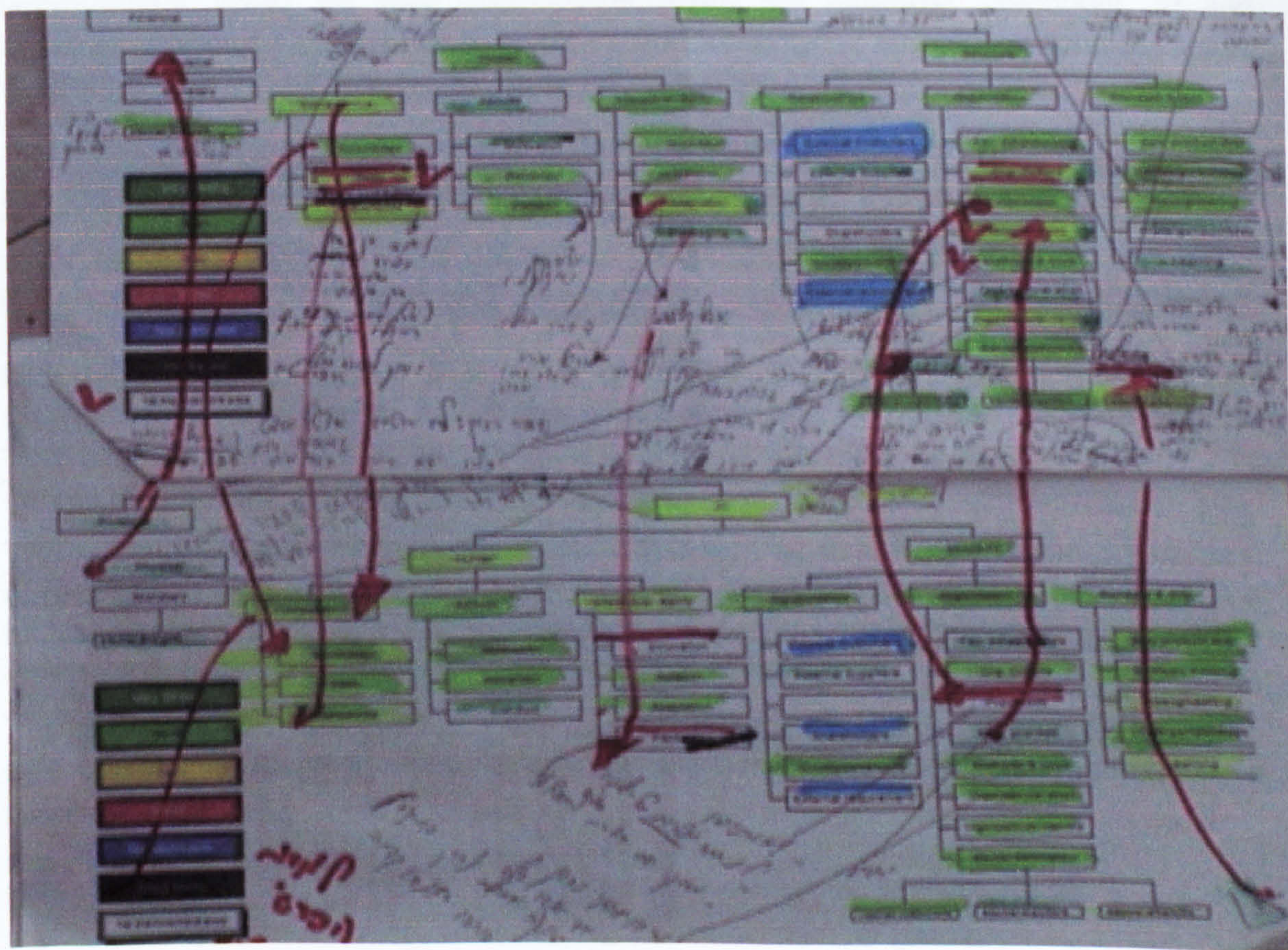
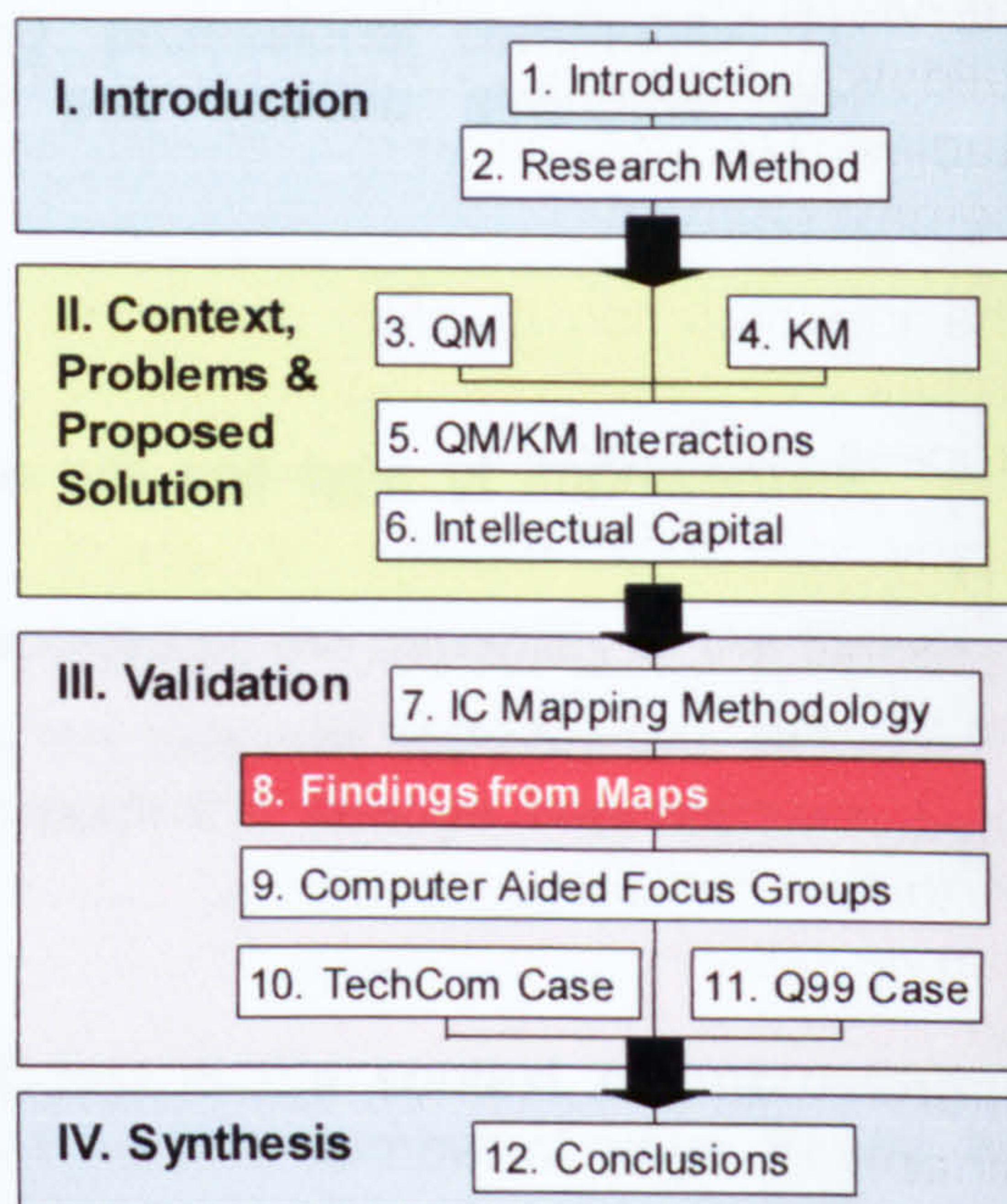


## 8 Findings from the Interviews and Maps

### 8.1 Aims

This chapter presents the findings from the IC mapping interviews. Its aim is to contribute directly to the understanding of several core research questions by analysing the perceptions of the interviewees on the following issues:

- ☐ Q1: Why do the QM and KM professional communities need to improve?
- ☐ Q2: What are the potential interactions between QM and KM professional communities?
- ☐ Q3: What are the Intellectual Capitals of the QM and KM professional communities?
- ☐ Q4: What are the potential flows of Intellectual Capital between the QM and KM professional communities?
- ☐ Q7: Does the IC mapping methodology show utility as a research tool?





## 8.2 How the maps were interpreted

This chapter is based only on information captured by the IC mapping process in the interviews. It does not refer to data from the other sources of information and validation tools the author used, namely the literature survey and the two case studies. The integration of the evidence from all these sources will be carried out in the next chapter.

The interpretation of each map involved a top-down approach (as opposed to the process of filling the maps which was bottom-up), which followed a three-step process shown below:

Firstly, identification of the “big picture” as revealed by looking at the map.

Secondly, focus on the expectations, i.e. roots, which are particularly good or poor (in the IC maps), or gaps that are particularly large (IC gap map).

Thirdly, an attempt to explain these specific IC assets, using not only the data coded on the maps (colours) but also the opinions about these assets expressed by the interviewees and documented as quotes in each interview. In the following sections the author explores some of the more interesting quotes (marked by small italic letters). While some represent the opinions of most interviews some represent minority opinions.

## 8.3 ICs of QM

### 8.3.1 The map

The following map represents the IC of the QM community, as perceived by the interviewees. It combines 12 maps of specific QM communities.

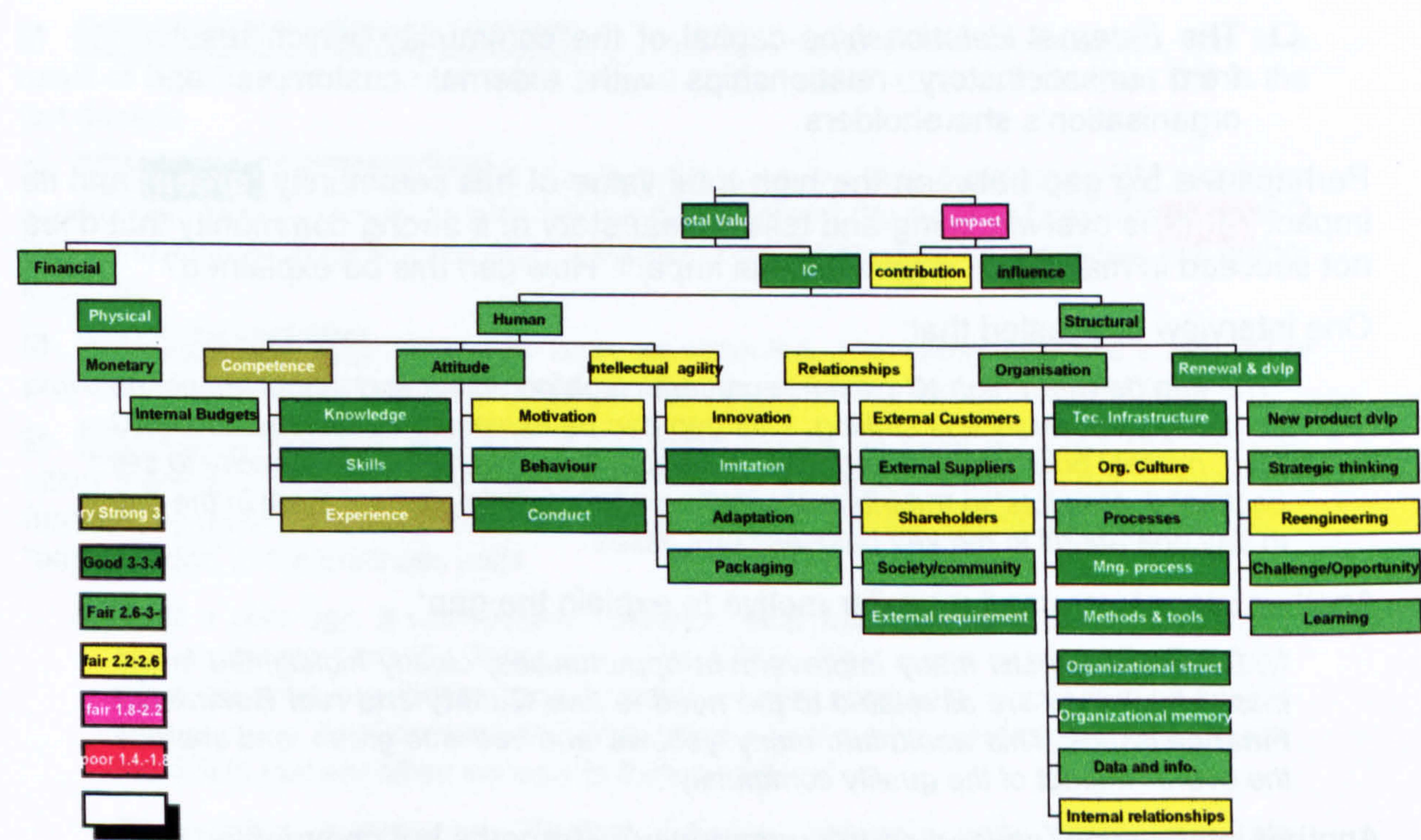


Figure 8-1: IC of QM community - aggregated map



### 8.3.2 The big picture

The QM professional community is a strong community. As the author expected the structural capital as well as the financial capital of the community is good. Human capital was also perceived as good.

*One interviewee commented: "The picture is very green. I am not surprised, because it took us many years to arrive at this almost-optimal situation... At second thought, maybe we are too satisfied with the current situation, and there is a risk of being too relaxed".*

*Another one, the head of a national QM community, agreed with this picture: "Looking at the map, I identify very positive improvement trends. Unfortunately I did not fill a similar map 10 years ago. However, I speculate that the 2001 map I just filled now represents 'greener' situation than a decade ago. The reason is the increasing competition faced by all corporate members of the national quality society. It forces all professional disciplines, including quality, to improve themselves".*

*"QM is a mature, large and well established community, which is integrated with the main stream of the quantitative thinking of most organisations"*

*AH also emphasized the maturity of his company's QM community: "It took us more than 10 years to reach this generally satisfactory situation. However, this situation embodies a risk – that we will be too satisfied with our capabilities. We must ensure that every year we come with new challenges and solutions".*

Although all 1<sup>st</sup> tier tools are "green", two 2<sup>nd</sup> tier roots are perceived as "yellow", having only fair IC:

- ❑ The *Intellectual Agility* of the community members, which is strongly impacted by their poor innovation level (as perceived by the interviewees).
- ❑ The *External Relationships* capital of the community, which results from unsatisfactory relationships with external customers and organisation's shareholders.

Perhaps the big gap between the high total value of this community (green) and its impact (pink) is overwhelming and tells a clear story of a strong community that does not succeed in making an organisational impact. How can this be explained?

One interview suggested that:

*"The gap between high IC (which represents high potential) and actual impact on company performance is striking. This gap can be explained by the 'red' in the IC map, namely poor external and internal relationships capital and incapacity to sell packaged 'products' to the internal customers and fully implement them in the day to day operations in the key business processes".*

Another interviewer used a similar motive to explain the gap:

*"...But there are still many improvement opportunities, clearly highlighted in the map. I think they are all related to the need to **link Quality and real Business / Finance** issues. This would turn many 'yellows' and 'red' into green, and improve the overall impact of the quality community".*

Another interviewee focused on the community's strengths but commented that:

*"...Unfortunately these strengths are not turned into enough impact and value. Paradoxically, sometimes the reason for that is not that the community is too slow to push forward new ideas, but that is handling in the same time too many ideas, innovations and initiatives"*



### 8.3.3 Strengths

#### Human Capital

The overall human capital is Good. Some specific IC assets stand out:

- ☑ **Competencies:** The members of the community are perceived as **knowledgeable**, **skilled** and especially **experienced** professionals.

*"Knowledge is green in 2000, but in 2001 this item weakened, as some key employees left the company, and due to some organisational changes including decentralization of several SBUs QM units."*

*"Our corporate QM community consists of the best people in their professional fields. By definition, it is a top experts community. We are very skilled in processes of education, training, facilitation and implementation. Most have 15-20 years experience in their field of expertise"*

- ☑ **Imitation:** the QM people are perceived to be very good at taking ideas from other places and imitating or adapting them for their professional needs.

*"High curiosity to best practices, many industrial visits, learning from others at conferences"*

*A different opinion (score was Yellow): "The community members do invest efforts in learning from others; still there is too much events of "re-inventing the wheel".*

#### Structural Capital - organisation

The overall structural capital is quite good. Several specific IC assets stand out:

- ☑ **External requirement** is one of the few IC asset types added by the researcher to the original IC distinction tree. The pressure imposed on the organisation by external forces (e.g. customers) to implement QM practices such as ISO 9000 certification was considered as an asset for the QM community, which leveraged their internal efforts.

- ☑ **The technological infrastructure** of most QM communities is excellent. This is a result of significant investments in the area of computerised support tools from QM in the last decade.

- ☑ **The management process** of the community i.e. the way it manages QM programs is perceived highly. This is no surprise, as this is one of the boldest focus areas on ISO 9000 and Quality Awards, and both influence most of the QM communities the author explored.

- ☑ **Methods and tools** are scored high, as expected. The community has a rich set of proven tools and methods, and the interviewee appreciated it as an important asset.

- ☑ **The Organisational Structure** of QM is very good. In most explored communities, either there is a strong central QM department, or an effective way to decentralize this function, by having a small central unit that serves as a knowledge centre, and referent or "ambassador" in the business units.

*"Until a year ago, it was 'yellow', because most functions have been centralized and to remote from the 'front line – the SBUs. After some decentralization took place, there is a good balance between central corporate functions that enable infrastructure development and knowledge sharing, and local quality functions in the SBUs that are close enough to the operations"*

*"In another community: "Perfect balance between very small corporate community and decentralized quality units in the divisions. The head of the community is located in the right place in the organisation – reporting directly to the CEO"*

- ☑ Another interviewee scored this IC asset low because "In many organisations the quality manager does not report directly to the head of the organisation. This is a critical success or failure factor".



☑ **The Organisational memory** IC asset is correlated to the *Experience* asset included in the Human Capital side. In some organisations where turnover is high, the QM people (whose turnover is usually slower) serve as an important part of the organisational memory.

*"This community is a corner stone for the company's organisational memory. Every new project is reviewed by one of the community member who makes sure that past lessons learned and experience will be incorporated into it".*

☑ **Structural Capital – Renewal and development:** To the surprise of the author, this item as well as all its sub-roots, was scored as quite good.

*"Sometimes the quality professionals are functions are considered to be traditional, slow to adapt and renew. However, when I look it our 1990-2000 development progress, I see many new initiatives, tools and concepts being added to the plan every year"*

### **Financial capital**

☑ The **physical capital** was considered as good – this referred in most cases to physical installations that support QM, e.g. laboratories.

☑ The **monetary capital**, which reflects mostly the internal operation budgets, was rated as quite good. The author suspects that if the interviewees were conducted one or two years earlier (i.e. in 1999 or 2000) the results would have been even higher. The crisis in the hi-tech industry that was heavily represented in the interviews has decreased the available resources of support functions in many organisations.

*"In the last 12 months is changes from over-budgeting to under-budget, which eliminate investments in the future (enough resources only for the immediate urgent tasks)"*

### **8.3.4 Weaknesses**

Although the overall picture is "**green**", the QM community does have several "**yellow**" roots, which represent relative weaknesses.

#### **Human Capital**

Some interviewees struggled with the need to make some scoring decisions regarding specific IC assets where the majority of the community people or the "typical" community members are demonstrating poor performance, but others perform excellently. This difficulty was present in the following two IC assets:

☒ **Motivation capital** of the community members is not high. This is the downsizing of experience. Many QM professionals, who have been working in the same position for many years, do not expect any career progress and in general are in favour of retaining the status quo.

*"Excellent people, but tend to focus more on being professional then on actual doing. They are not young, used to be more energetic 10 years ago"*

*"The managements of many organisations block initiatives and ideas, poorly reward quality staff thus damage the initial high motivation and commitment".*

☒ **The Innovation** capital of the community members is fair. Typically, they are characterised as mainstream and "conventional" people. Poor innovation is the reason for the scoring of the whole "intellectual agility" capital as fair, although its other components are good.



"Quality people are technologically very innovative. However, the QM business innovation is poor".

### **Structural Capital**

- ☒ The low scoring of **External Customers Relationships** is explained by the gap between the importance of the customer, which is linked to the very essence of QM, and the perception that the actual performance in this area is "mediocre".

*"This should have been the focus of the community. 'I like the idea that Motorola's quality manager has the title VP customer Satisfaction. In our case even doing a good customer satisfaction survey is a Sisyphus effort'".*

*"This type of relationships was enhanced in the last decade as a result of the new trend to invest in CRM systems. However, quality functions are not yet involved enough with CRM".*

*"The attitude of QM people: 'The customer is a burden – we (the QM professionals) know better than the customer'".*

- ☒ The low scoring of **Shareholders relationships** represents the frustration of QM people who think that QM should be much more visible to the shareholders, and be discussed regularly in Boards meetings.

*"We have no relationships, let alone impact, with the company's shareholders"*

*"No relationships. Better relationships might be useful especially today, when the Investors Relationships of the company are not very good".*

- ☒ **Organisational culture** was scored low and the reason why is explained by one interviewee below:

*"There is a large gap between the messages of the community regarding the 'ideal' cultural values, and the actual culture of the community which is business oriented. The QM people do not adapt to the real company culture".*

*Another interviewee had an opposite opinion that led him to score Culture as green: "We understand another cultural characteristic – there is only marginal value to the formal procedures and rules. Therefore, we use alternative mechanisms to implement our methodologies"*

- ☒ The QM community is not excelling in **Internal Relationships** capital.

*"Internal politics block truly effective internal alliances. Similar situation with internal suppliers"*

*"Because the corporate functions shift to profit centres, there are many cases of destructive internal competition. Also the community did not yet fully internalise the meaning of being a service unit. Probably over time all involved will learn how to work together".*

*"The community focuses too much on managerial and control roles. Using management processes e.g. review, audits and good access to the top management we sometimes **force** internal customers to use our services. In my opinion, this is a mistake. We should only **offer** our good services and act only as internal consultants".*

*"Poor cooperation in critical interfaces e.g. Quality-Marketing (in product definition) or Quality-finance (in cost of quality issues)"*

- ☐ The average scoring of strategic thinking was **green**. However, it is interesting to bring in an opposite opinion:



"Quality was very operationally focused - excellent at building quality into each spacecraft but at too high a cost, because they did not build it into the strategic product and production processes enough" (AW)

## 8.4 ICs of KM

### 8.4.1 The map

The following map represents the IC of the QM community, as perceived by the interviewees. It combines 12 maps of specific QM communities.

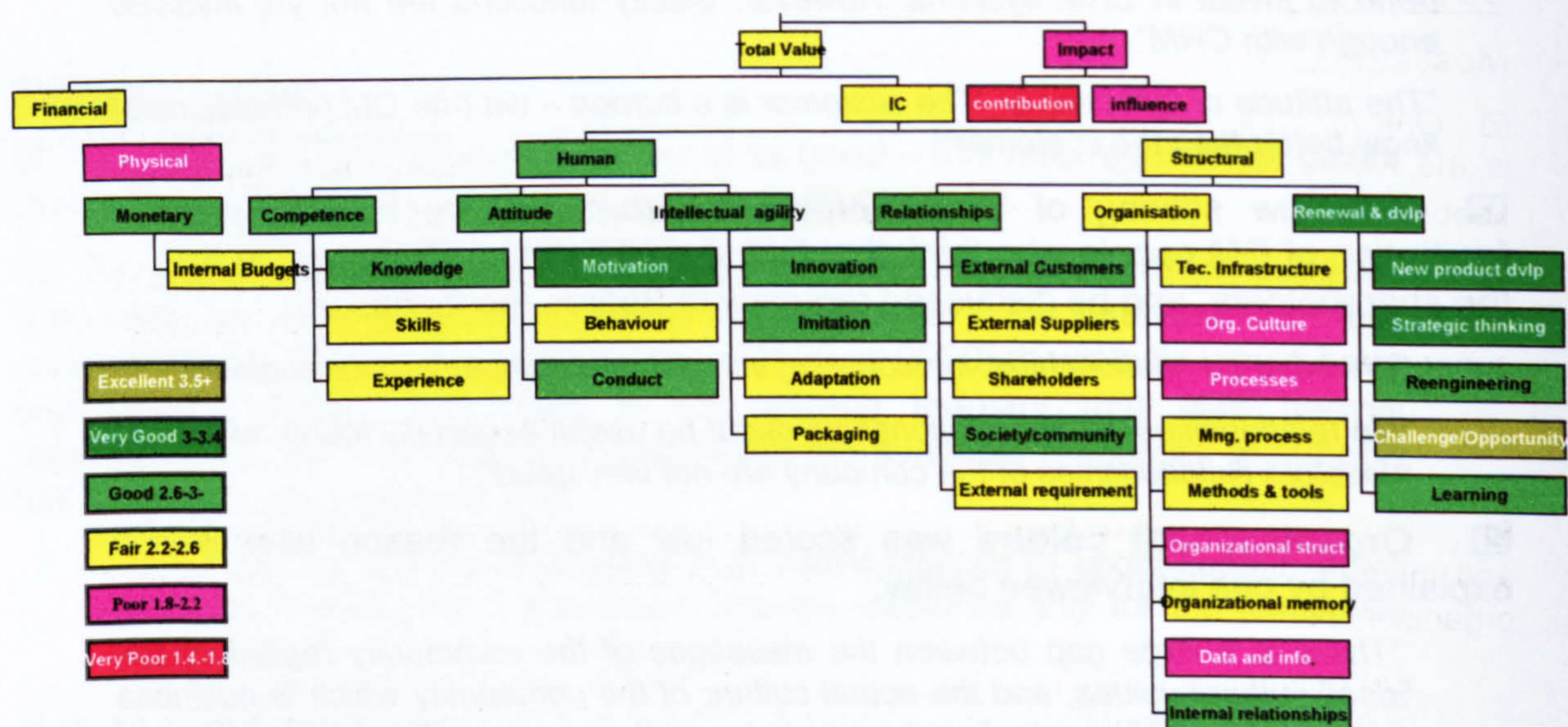


Figure 8-2: IC of KM communities - aggregated map

### 8.4.2 The Big Picture

The IC of the KM community is **fair** - significantly lower than the one of the QM community<sup>14</sup>.

The structural capital is **fair** with the exception of Renewal and Development capital, which is high.

The other side of the IC distinction tree, the human capital, is **good** but not enough to balance the fair structural capital.

*AW linked these Human and Structural capital: "Excellent people but they lack good structural support to leverage their full potential"*

The impact of the community is **poor**, which can be explained by the fair structural capital. As claimed by many IC theorists, the role of the structural capital is to turn human capital into value (Roos *et. al.*, 1998). In the case of the KM community, this transformation hardly happens.

<sup>14</sup> This is apparent not only from comparing the maps and reviewing interviewees' comments, but was also statistically validated (by the t-test described in the previous chapter).



The financial capital of the community is also **fair**. It is not a “rich” community –and its people feel that the under funding contributes to its poor impact.

### 8.4.3 Strengths

19 IC assets were scored as **good**, **Very good** and **Excellent**. Similarly to the procedure taken when the author analysed the QM community, attention was focussed in this section only on the **Very good** and **Excellent** assets.

#### Human Capital

☑ Although many roots are scored as quite good, only one IC asset was perceived as “good”: this is the **Motivation** of the community members.

#### Structural Capital

Most structural capital roots were scored as fair or quite poor. Whowever:

☑ One root and its sub-roots stood out as good: **Renewal and Development**. Not only is the KM discipline and community relatively new (at least in its modern form), but it keeps “reinventing” itself. This is due to three very good IC assets<sup>15</sup>:

☑ **New product development** – the community is investing a lot of efforts on developing new “products” – services, tools and technologies – which are intended to support effective KM in organisations.

*“Many information/ intelligence products have been developed, but only partially used by the intended users”.*

☑ **Strategic Thinking** – from its beginning, the community leaders, both practitioners and theoretician, have tried to link KM principles and tools to the strategic objectives of organisations.

*We conducted extensive strategic planning process, and were supported by two of the largest American consulting firms. But the quality of these processes was disappointing.*

*“We have gradually changed the way we are organised, how we work with internal customers etc. However, it was evolutionary, not revolutionary”*

*Another interviewee had an opposite opinion: “Only 2 years after the KM program started, the need to apply a strategic framework was identified”.*

*And a more sever critic: “They speak the strategy language, but they don’t think strategically”.*

☑ **Challenge/opportunity** – one of the strongest assets of the community is that knowledge is considered as “*the most valuable asset of the organisation*” and that currently it is widely accepted that it is not fully exploited. This challenge represents a significant opportunity to the community, and can leverage its activities (for example, by making them more appreciated by the rest of the organisation).

*“As we presented so many times to management, BIC could significantly impact business performance”.*

*“The challenge is very significant in a hi-tech company like TechCom. All stakeholders are well aware to the importance of this challenge”.*

### 8.4.4 Weaknesses

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<sup>15</sup> However, due to deficiencies in other structural capital assets, the implementation is poor.



More than half of the items of the IC distinction tree, 24 out of 46, are scored as **fair**, **poor** or **Very poor**. Here the author elaborates on each, since they represent an improvement opportunity.

### **Human Capital**

Overall, the human capital is scored as quite good. However, many of the sub-roots are scored as fair.

- ☒ **Experience** – This is natural in the case of this emerging discipline.

*"Although they are competent professionals, the members of the community are not experienced in the field of KM"*

*"Experience of the corporate group was considerable, but many KM referents in the divisions have no relevant experience in this area"*

- ☒ **Skills** – The training provided to KM professionals is usually either non-existent or in the best case very limited.

*"The community is probably the most capable in the country. I picked the yellow to represent the gap between the situation and my expectations as of the ideal KM professional"*

*"I don't think that the 'right' people are promoting KM. Most of the current KM people come from the technology side, and are skilled in playing with IT toys. Only few came from the area of Content – and these are the skills which are really needed"*

*"Our skills in focused tasks in specific areas are OK, but when it comes to systematic approach there is still a long way to go"*

*"There are big 'holes' e.g. "human intelligence" (as part of business intelligence)".*

*"KM people are perhaps good at technology, and they have 'popular knowledge', but they lack strategic and academic skills"*

- ☒ **Behaviour** – this IC asset refers to the compatibility of the community members with the values of the organisation.

*"Too much internal politics and power games"*

- ☒ **Packaging** – Many interviewees felt that KM people are perhaps busy with developing new tools, but are failing to "pack" them into useful ones:

*"The KM people are really innovative. However they failed to pack their efforts into true value adding "products".*

*"According to another interviewee, the poor impact can be explained partially by "the inability to package motivation, efforts, initiatives and innovation into implementable and marketable products, which can add value"*

*"Ideas have been translated into products, but not into really usable product".*

### **Structural capital: Relationships**

- ☒ **Shareholders** – it was felt that, similarly to the case of QM, the KM community has very few, if any, relationships with the shareholders of the organisation, e.g. its investors.

*"A missed opportunity to translate the innovativeness of the KM program into better Investors relationships (as Skandia did)"*

- ☒ **External requirement** – this is one of the new roots added to the original IC distinction tree. Its poor score is not surprising:



*"The lack of external pressure to "do" KM, as opposed to the pressures by customers and ISI (who provides ISO9000 certification) to do QM, is a clear weakness of the KM community in the company"*

- ☒ **External suppliers** – it was felt that the KM people are not very good at exploiting professional service and tool providers in the areas of KM. There are few cases of close and fruitful collaboration.

### **Structural capital: Organisation**

- ☒ **Technological infrastructure** – while some were relatively satisfied with the infrastructure, others expect much better support of the information systems. This also relates to some conflicts between the KM group and IT departments in some organisations.

*"Relatively to what we see in other companies, our infrastructure is excellent. But, I see a lot of room for improvement"*

*"The KM community decided that it need not "own" the IT infrastructure, and can leave it to the IT department. However, I think that this weakens the position and potential impact of the community".*

*"KM had a very hard time working with senior management to convince them of the need and with IT to help them to change their culture to develop the web and groupware infrastructure we needed for the KH. These were two of three biggest problem areas"*

- ☒ **Organisational culture** – the KM people talk about the "right" KM values, e.g. knowledge sharing, reuse and learning from failures. However, not only do they not succeed in implementing these values throughout the company, in many cases they do not even practice these values in their own work.

*"The culture of my team is very good, but when it comes to the larger KM community which includes people from other units – I give it a 'red'"*

*"The community is highly political, too focused on personal status issues"*

*"The KM people are interested only on what they are doing; their knowledge sharing with other disciplines is low".*

- ☒ **Processes** – The same argument as in "organisational culture" was discussed – although they developed KM oriented processes, they do not normally implement them for their own work and are not very successful in implementing them throughout the company.

*"Not enough co-operation and knowledge sharing within the community"*

*"They are only now starting to have formal processes, e.g. monthly meetings of the KM forum"*

- ☒ **Management processes** – several interviewees felt the KM program is not really managed systematically.

*"KM is not managed, controlled or led" by the corporate management – it is not high enough in the organisational priority to get management attention. They never really understood our potential, and hardly directed the way we worked".*

*"Many KM activities are isolated efforts which result, in the best case, in 'Islands' of managed knowledge, but*

*"Management does not fully understand our role, and this negatively impacts many of the 'boxes'. It is very difficult to operate effectively in this 'laissez-fair' managerial culture".*

- ☒ **Methods and tools** – In many cases, the KM people talk about KM but do not have a comprehensive toolkit to support KM values. Most



methods and tools developed by the community are perhaps 'nice', but are not robust enough to be implemented significantly.

☒ **Organisational structure** – In most of the explored organisations, the organisational structure of the KM community is still emerging. However, all interviewees felt that the current structure does not fit the purpose, and cannot lead to any significant impact. The repeated perceived deficiencies identified are: how to embed KM activities into the business units, and how the structure can help to put KM on the agenda of the top management.

*"The idea of a corporate function supported by a steering team is good. Two weaknesses: not clear dominant leader; and insufficient integration of the SBUs".*

☒ **Data and information** – this low score refers to the misalignment between one of the main tasks of KM people and their actual achievements. For example:

*"We process and provide very good information from external sources, but very little from internal sources"*

*"They don't know how to turn the data into meaningful information products".*

**Financial Capital** – this element, which complements IC in forming the total "market value" of the community, was rated poorly by most interviewees.

AW thought that this is a major inhibitor to success: *"KH (Knowledge highway, the company's KM program) had almost no budget - one of its three biggest problems"*

## 8.4.5 Impact

☒ The **impact** of the community was scored as particularly low, based on the scoring of its two components:

☒ **Contribution** – the perceived contribution to the objectives and performance of the organisation is low. But how can the contribution of KM be measured?

*"One of the problems of KM is the pressure to prove ROI (Return on Investment) and consequently fail to focus on the real potential benefits of this discipline".*

☒ **Influence** – the perceived influence of the community of the respective organisation is quite poor.

*"They (the KM community) have only marginal impact on the company's key business processes of the company"*

*"Many potential customers did not use our services".*

*"Perhaps we did not have the most critical skill – good political capability"*

One interviewee commented on how the poor impact (real contribution and political influence) of KM impacted her own destiny in the company:

*"On January 2001, as part of downsizing, the management decided to eliminate the corporate BIC. This move effectively eliminated the BIC community, and I was fired. Probably it is because of our relatively low impact on business performance, and because the management did not understand our role".*

One interviewee highlighted another reason for the low impact:

*"KM fall into the fashion trap – it is considered today as another fad – and people are tired of management fads, due to the recent experiences with TQM".*



# 8.5 IC Gaps

## 8.5.1 The IC gap map

The IC gap map represents the gaps in each IC asset between the QM and KM communities. The map is intended to support its users in identifying potential IC flows.

In this section the author analyses the accumulated gaps between the QM and KM general-communities.

The grey and black boxes represent ICs assets that are better in QM. The darker colour represents bigger gaps.

The blue boxes represent ICs assets that are better in KM. Darker blue represents bigger gaps.

The white box represents ICs that are perceived as similar in both communities (gap < 0.23).

The boxes with a red frame represent ICs where gaps were found statistically significant in the t-test. However, the author thinks that even gaps that are not statistically significant according to the t-test can indicate that there may be a gap. This is why the author decided to refer also to such gaps as potential opportunities for an IC flow.

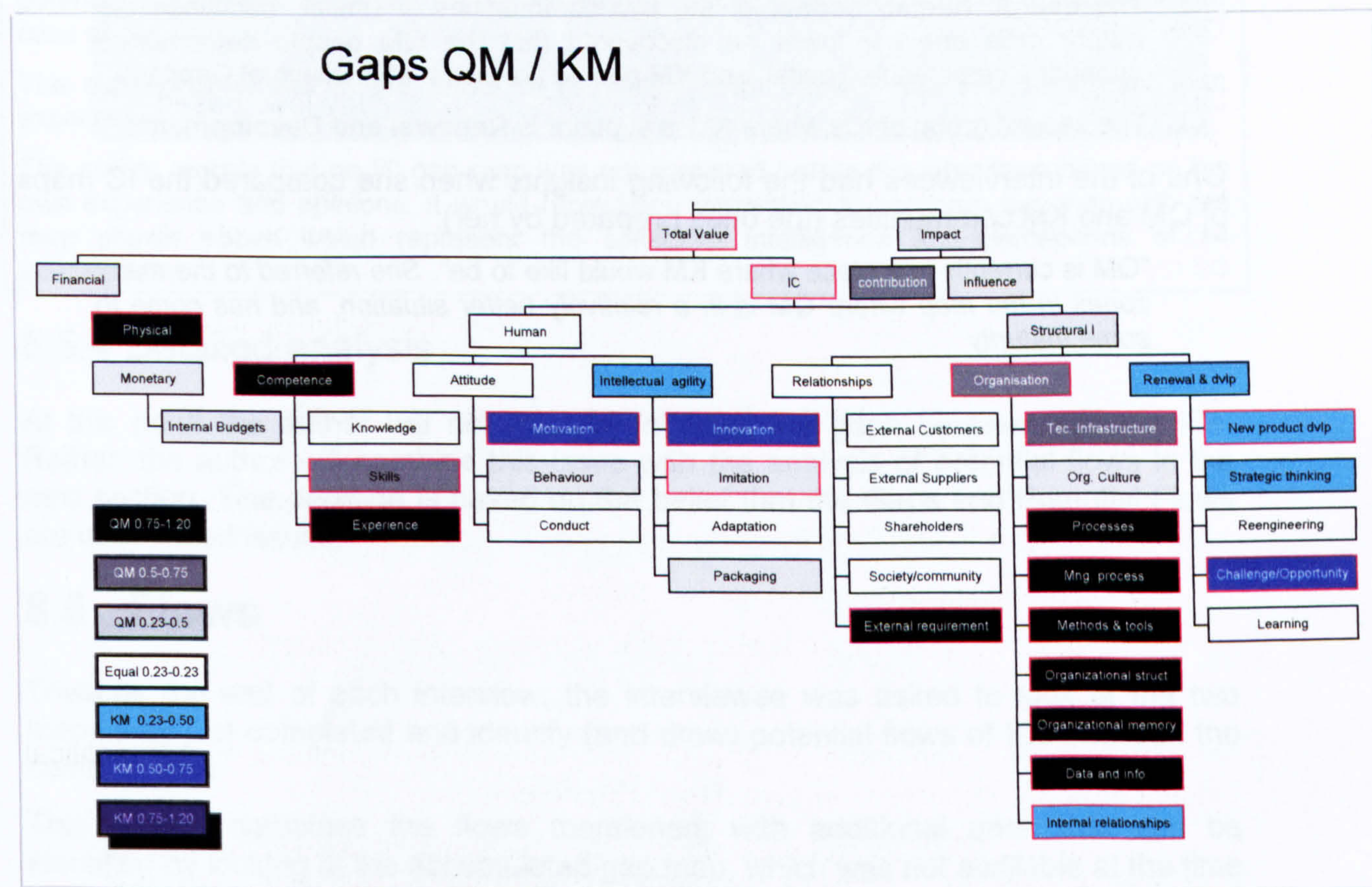


Figure 8-3: ICs gaps - aggregated results

## 8.5.2 The Big Picture

A visual rough analysis of the map provides the following conclusions, all referring to the **perceptions** of the interviewees:



1. The QM and KM communities **differ** in their IC – in most IC assets there is a gap.
2. Most gaps are **statistically significant** (red frame).
3. Some **clear patterns** can be identified, i.e. “Blue” and “Grey/Black” IC zones.

ZK described these patterns by suggesting that “*the map of KM is a “**mirror picture**” of QM’s map*”, and vice versa. Some of the major differences are listed in the following section:

- ☐ The **impact of the QM community** is much higher than the impact of KM. This is even more significant for the two components of the impact: influence and contribution.
- ☐ The **total value** of the QM community (which combines financial capital and intellectual capital) is higher. The gap in total value, although not large, is statistically significant.
- ☐ The **financial capital of the QM** community is much higher than the one of the KM community
- ☐ Most gaps are black and grey, i.e. indicate superior ICs of QM. The author counted 26 black and grey boxes, and only 8 blue boxes (IC which are higher at the KM community). The **overall IC of the QM community**, as well as many IC categories, is better than the ones of the KM community.
- ☐ The **structural capital** of the QM community is better. This is mainly due to QM superior organisational capital.
- ☐ The **overall human capital** of the two communities is similar, but when the author drills one tier lower he discovered that the QM people demonstrate superior Competence Capital, and KM people are better at Intellectual Capital.
- ☐ The second group of ICs where KM is superior is **Renewal and Development**.

One of the interviewees had the following insights when she compared the IC maps of QM and KM communities (the ones prepared by her):

“QM is currently in a place where KM would like to be”. *She referred to the many zones in the map where QM is in a relatively better situation, and has come to some maturity*



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### 8.5.3 An early statement from the author

This phase of the thesis is too early to arrive at final conclusions. They will come later. However, at this point the author would like to share some of the early thoughts he had when looking at the IC gaps for the first time:

Did the map surprise the author? Yes and no.

No, it did not surprise him because it supports or even augments many of the early assumptions of the author about the QM and KM communities. For example:

There are significant differences in IC between the communities, and each is stronger in specific ICs. This may provide an opportunity for IC flows and exchanges.

The macro pattern of superiority of QM in organisational capital, and the superiority of KM in the Innovation, Renewal and Development.

In many micro details i.e. specific IC assets, the picture matches the early thoughts of the author. For example, the better *Challenge* and *Motivation* capitals of KM, and the good *External Requirements* capital of QM.

Yes, the map did surprise him because he did not expect that the QM community IC to be so much better than KM's IC.

The author did not expect the Competence of QM to be superior. Indeed, he had the opposite opinion before the beginning of the interview process. He expected that the overall Human capital of KM to be higher.

The significant gap in impact, influence and contribution was striking. The early assumption of the author was that both have poor impact, influence and contribution, compared to their potential capabilities. However, he did not expect that this gap would be much worse in the case of KM.

The superiority of KM in the areas of innovation and renewal was less significant than expected.

The author regrets that an IC gap map was not prepared before the interviews based on his own experience and opinions. It would have been interesting to compare this map with the map shown above which represent the collective intelligence and perceptions of 14 interviewees.

### 8.5.4 Detailed analysis

At this point the author will not analyse in detail the gaps between specific ICs. Rather, the author will combine this issue with the analysis of potential flows in the next section. This decision is based on the belief that the Gaps and Potential Flows are inter-linked issues.

## 8.6 Flows

Towards the end of each interview, the interviewee was asked to look at the two maps they just completed and identify (and draw) potential flows of ICs between the communities.

This section combines the flows mentioned, with additional ones that can be identified by looking at the accumulated gap map, which was not available at the time of the interviews.

In this section the author lists a large number of potential flows. However, they represent opportunities for the general communities. In the case of a specific pair of QM and KM communities (e.g. QM and KM communities of company X) a much smaller number of flows were suggested.



When the author started the research, it was assumed that the flows were provided by gaps in specific IC assets between the communities (using the traffic lights visual language: flows from green to red or yellow). However, one interviewee drew attention to another opportunity for co-operation: combining efforts when the IC asset of both communities is poor in order to improve this effort (suggested by AZ and SH).

From	To	Asset	Comments
QM	KM	Structural Capital (in general)	<i>"Will enable KM to turn its high Human Capital into results"</i>
QM	KM	Competence Knowledge Experience	<i>"Quality could provide some of the knowledge and other human capital needed by KM, since they have a much longer history and larger workforce with education and experience in areas that are related to KM such as Best Practices and Lessons Learned".</i>
KM	QM	Strategic planning Culture	<i>"The KM community was helping Quality by helping them develop more strategic, knowledge-oriented culture and processes"</i>
QM	KM	Tools and methods	<i>"KM have very small set of tools"</i>
QM	KM	Financial capital	<i>"...because this is one of the most serious problems of KM – almost absolute lack of resources".</i>
QM	KM	Organisational Capital	<i>"The organisation capital of QM is clearly superior to the emerging fuzzy organisational capital of KM. Sharing or "lending" some of QM organisation capital with KM will reduce the long time to arrive at an effective maturity stage, and will improve the effectiveness of the KM people"</i>
QM	KM	Influence Relationships	<i>"Quality community could contribute its ability to generate influence and relationships"</i>
QM	KM	External requirements	<i>"I wish that KM doesn't have a model similar to ISO 9000, which will drive the whole organisation to change"</i>
QM	KM	Organisational structure	<i>"We need to tie KM to a strong existing organisational structure – QM's detriment for example"</i>
KM	QM	Motivation Innovation	<i>"KM people can add to the spirit and freshness of QM"</i>
QM	KM	Processes	<i>"The excellence of QM people in processes is the only reason for KM to work with them"</i>
KM	QM	Challenge	<i>"The QM community could benefit from the superior new "Challenge" of KM"</i>
Bi-directional		Packaging	<i>"Both are not very strong in creating implementable solutions – and can work together in this area"</i>
QM	KM	Organisational memory	<i>This area is included in the territory of KM, in some of the writing in this area. However, QM can support KM with some of practical tools of retaining the organisational memory.</i>



Bi-directional		Shareholders	Both communities are poor in this area. Co-ordinated effort might put their issues on the shareholders agenda.
KM	QM	Renewal & development	"QM can benefit from the learning and renewal capabilities of KM"

Table 8-1: Potential for IC flows between the QM and KM communities

The following pair of maps shows the flows described above. As mentioned before, it should be emphasised that these are just some of the potential flows – and that the actual set of flows which might be relevant to a particular pair of QM/KM communities is dependant on the specific context and characteristic of these communities.

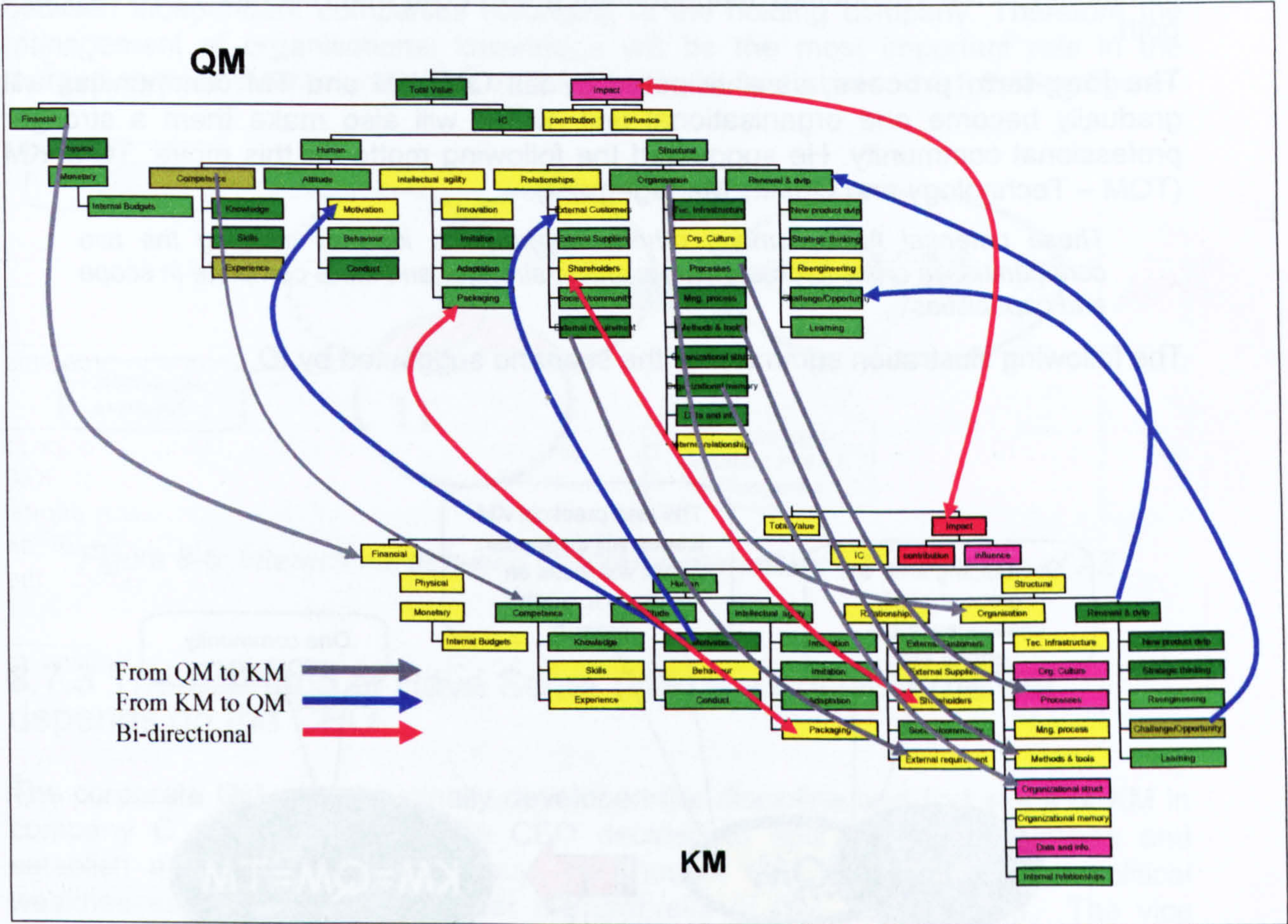


Figure 8-4: Flows: summary chart



# 8.7 Interactions

In Chapter 5 the author listed twelve alternative interactions patterns between QM and KM, which were discovered in the literature. The intention of this section is to describe some of the interaction types and scenarios suggested by the interviewees. Similarly to what the author found in the literature, the interviews surfaced interactions covering the entire spectrum from “no-strategic-links” to “full merger”.

## 8.7.1 The scenario of Itzik Dana (ID) – merging of KM, QM and TM

**The current Situation** in TechCom, as interpreted by ID: QM and KM are separate communities, but there are some overlapping activity areas. A third relevant community is the Technology Management group (TM) that has many overlaps with both.

**The long-term process**, as anticipated by ID: QM, KM and TM communities will gradually become one organisational unit, which will also make them a stronger professional community. He suggested the following motto for this move: TQM=KM (TQM – Technology and Quality Management).

*These potential flows, among others, support the idea of merging the two communities in order to create a new entity, stronger and more complete in scope and capabilities”.*

The following illustration summarises the scenario suggested by ID.

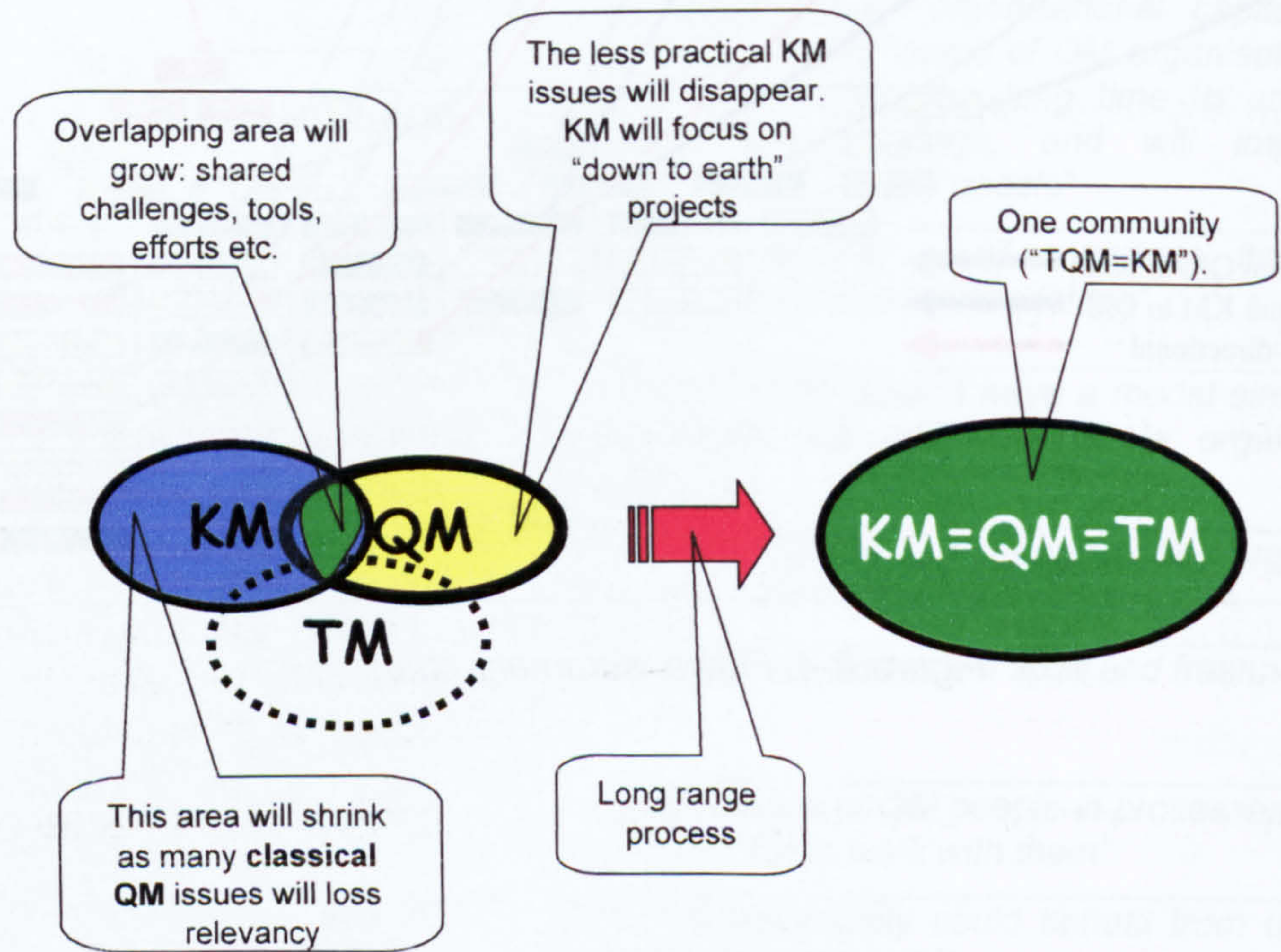


Figure 8-5: Interactions between QM/KM communities – the scenario of ID



### 8.7.2 The scenario of Atai Ziv (AZ) – merging of KM, QM and IT

**The current situation:** there are many destructive overlaps between the communities, leading to power games and internal competition, instead of focusing efforts on servicing the internal customer. The overlaps exist between three communities: KM, QM and IT (Information Technology). The KM community is very weak.

**The scenario of AZ:** transform to one strong community, in which the KM challenge is the core role and competency. This will best suit the needs of the new organisational structure of the company, which is much more decentralised. TechCom will transform to a holding company, and the SBUs into independent companies. In this structure, the main challenge is to continue to share knowledge between independent companies belonging to the holding company. Therefore the management of organisational knowledge will be the most important role in the merged corporate community. The transformation is illustrated in the following figure.

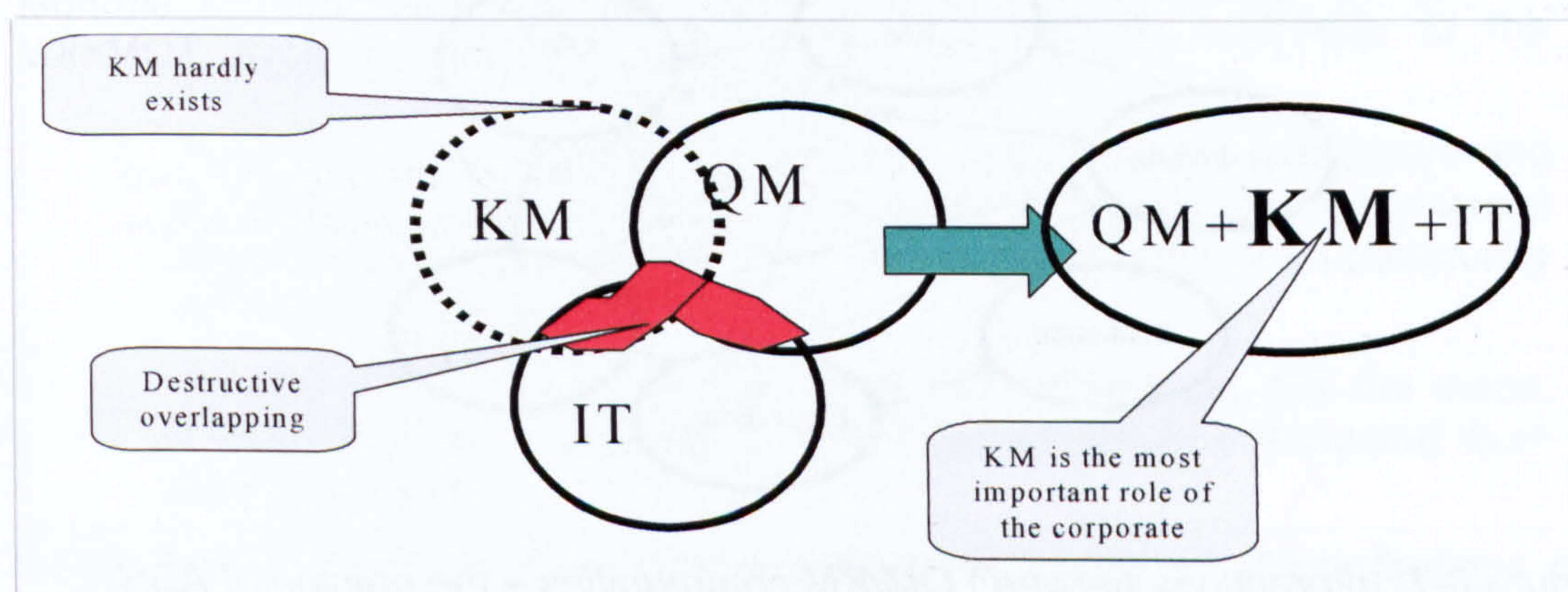


Figure 8-6: Interactions between QM/KM communities – the scenario of AZ

### 8.7.3 The scenario of Hava Scher (HS) – a possible merger depends on the CEO

The corporate QM group originally developed the discipline and first steps of KM in company C. Two years ago the CEO decided to split the two disciplines and establish an independent KM group. He thought that there were some political weaknesses in including KM under the umbrella of QM. SH, the QM. The vice president thinks that there is still the possibility that this decision will be reversed, and the group will be called “Knowledge and quality management”. However, this is a significant change that might happen only if the political constellation is different.

### 8.7.4 The opinion of Arian Ward (AW) – synergies - yes, take-over - no

AW believes there is considerable room for mutual support and learning – but emphasised that this should be done through combining efforts of common goals, not by a “take-over”:

*“Quality could provide some of the knowledge and other human capital needed by KM, since they have a much longer history and larger workforce with education and experience in areas that are related to KH such as best practices (BP) and lessons learned (LL). This is the key area where they could (and did) merge their efforts, but not through a take-over. Instead we used the concept of constellations to link the communities without any one community having to*



control the other. The KM community was helping Quality by helping them develop more strategic, knowledge-oriented culture and processes, but still had a long way to go”.

### 8.7.5 The opinion of Abraham Huli (ABH) – no particular linkage

ABH thinks that KM is linked to quality, but also to marketing, engineering etc. He does not see a reason to create a special link between QM and KM. He brought an example from his company:

*“The head of one of the quality functions in my company, the QA auditing unit, claims that their function is mostly about KM. I think that this is a fashionable, artificial and unjustified statement. Why should we, the quality community, become a knowledge monopoly?”*

The following figure illustrates the above attitude:

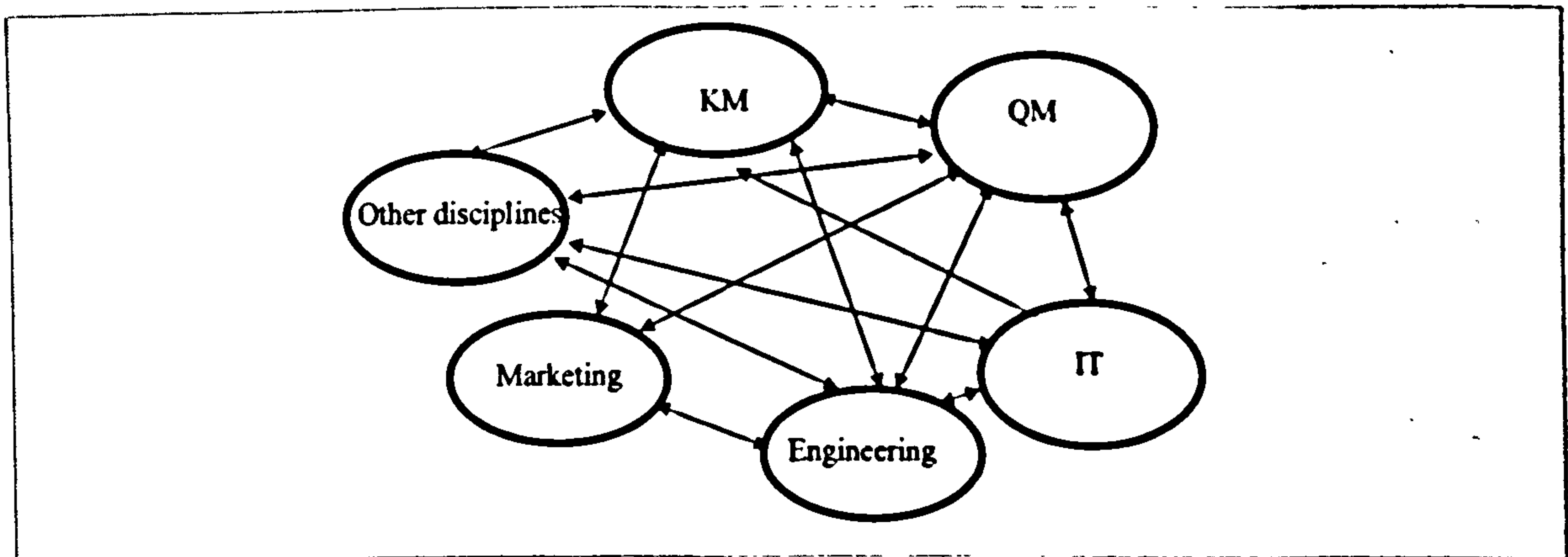


Figure 8-7: Interactions between QM/KM communities – the opinion of ABH

### 8.7.6 The opinion of (Dr. Ami Hari) AH – no particular linkage

AH joins ABH in rejecting the idea of particular significant synergies between QM and KM.

*“I don’t see strong linkage between QM and KM. The links are in the details e.g. in specific tools like CVM, but are not strategic”*

### 8.7.7 Zur Keren (ZK): The same cage?

ZK was involved in the creation and activities of both activities, as part of his work in organisational development. In the last two years he took time-out from his operational work to focus on academic work. This enabled him to re-examine the communities from a more critical viewpoint. He believes that KM is at a great risk:

*“QM is completely trapped in the “Iron Cage” of procedures, structured processes, audits and measurements. They became political tools in the hands of small bureaucrats. The spirit of quality disappeared. I am afraid that KM is at a risk of following QM and takes a similar path”*

ZK saw another reason why KM should avoid close interactions with QM:

*“QM is a bureaucratic discipline which is based on management and measurement of failures and no body trust people whose core task is control”.*

### 8.7.8 Dr. Ora Setter (OS): where KM would like to be

OS agrees with the opinion of ZK described in the previous section, and thinks that KM should follow QM. However, the interpretation is completely different – this move



is considered as a positive one. When she compared the QM and KM maps she commented:

*"QM is currently in a place where KM would like to be"*

## 8.8 Conclusions

In this chapter the author has summarised the findings from analysing the outputs of the IC assessment interviews. The overall picture is compatible with the findings from the literature survey and the case studies. However, when the author drills down into the details, this chapter provided many new insights on four of the research questions.

This is not a surprise. The insightful and rich set of findings is the result of three factors:

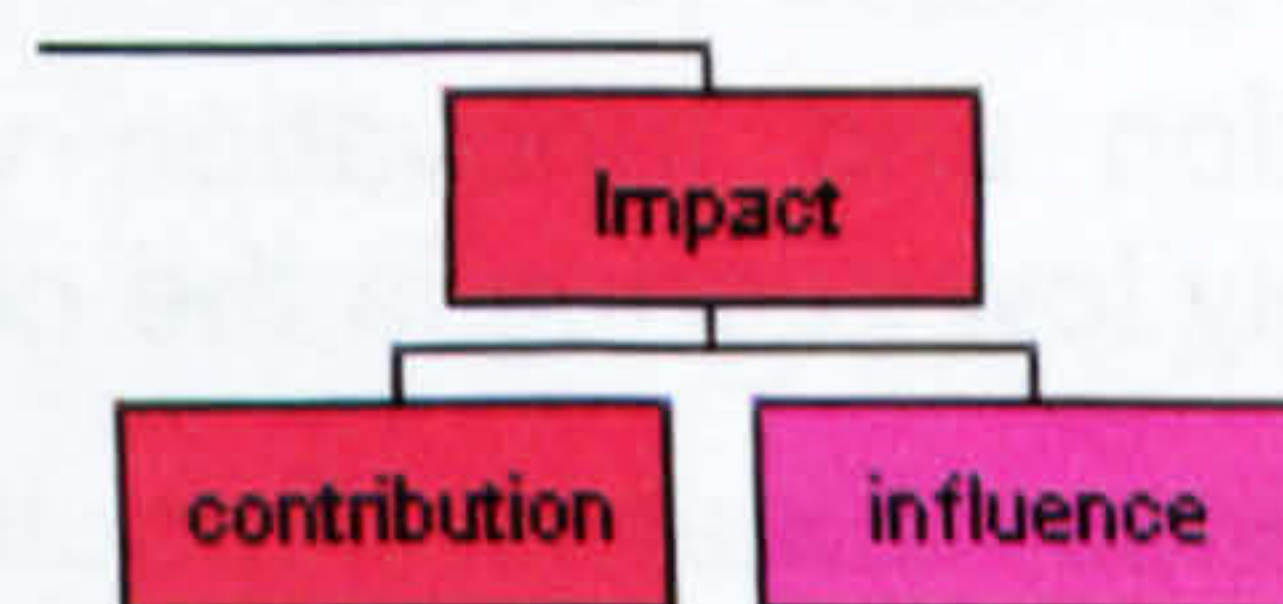
- ❑ **Excellent interviewees**, with relevant experience and positions, and deep personal understanding of the issues involved. Moreover, all were very co-operative and did their best to contribute to the understanding of the explored issues.
- ❑ **Diversity** of the group of interviewees, which cover practitioners and academics, representatives from several public and commercial organisations, coverage of many stakeholders' positions (community leaders, members, suppliers etc).
- ❑ **Structured processes** and a set of supporting tools, like the maps, which resulted in relevant and focused information extracted from each interview.

In the following section the author provides the highlights of the findings on each research question:

### Q1: Why do the QM and KM professional communities need to improve?

The case is similar for the two communities. From a macro perspective:

- ❑ Both are facing a significant challenge – a large opportunity to make a difference in the performance of the organisations they are working for.
- ❑ Both have many strong intangible assets, i.e. good people.
- ❑ And yet, the impact of both is poor – their influence on the organisational life (especially in the case of KM), as well as their contribution to the organisation's performance is low.
- ❑ Therefore both are looking for ways to enhance their impact and fully utilise their capabilities and realise their potential contribution.



When looking in at the finer details of the map, many weaknesses are discovered that contribute to that low-impact situation.

### Q2: What are the potential interactions between QM and KM professional communities?

Most interviewees suggested several different alternative models for QM/KM interactions – each based on the particular experience, position, personal agenda and basic professional beliefs of the proposing interviewee, as well as on insights the interviewee gained during the interview process.



The twelve suggested models covered the full spectrum that was also identified in the literature, from full merger to no-interactions. Most interviewees shared the thought that the communities have common ground for co-operation, and differ in the scope of such co-operation.

**Q3: What are the Intellectual Capitals of the QM and KM professional communities?**

The aggregated ICs maps of the QM and KM communities provided a clear picture of their ICs, as perceived by the interviewees. A numerical test supported the suggestion that these maps are valid (by showing that the differences in specific ICs between the communities are statistically significant).

The IC map of the QM community was much “greener” than the KM one. While both have good Human Capital, the QM community is better in Structural Capital, because of better organisational capital.

However, the KM community has better Renewal and Development capital, as well as superior Intellectual Agility capital.

It is not the intention of the author to list the findings on each specific IC in this concluding section. However, some will be highlighted in which the gaps are very high as the IC gap map revealed:

The *Opportunity/Challenge* capital was the highest scored capital for KM, and was significantly superior the QM’s opportunity/challenge.

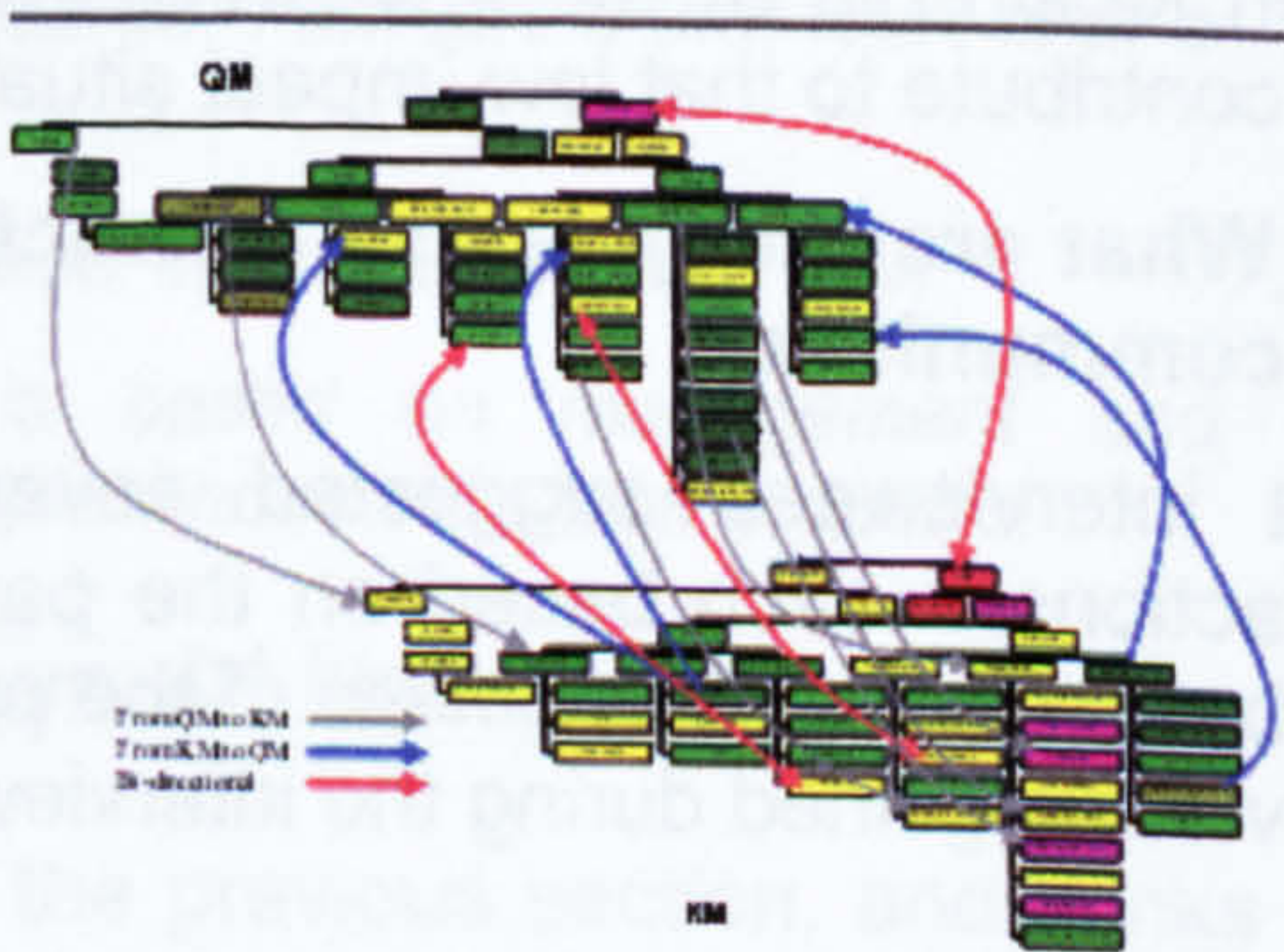
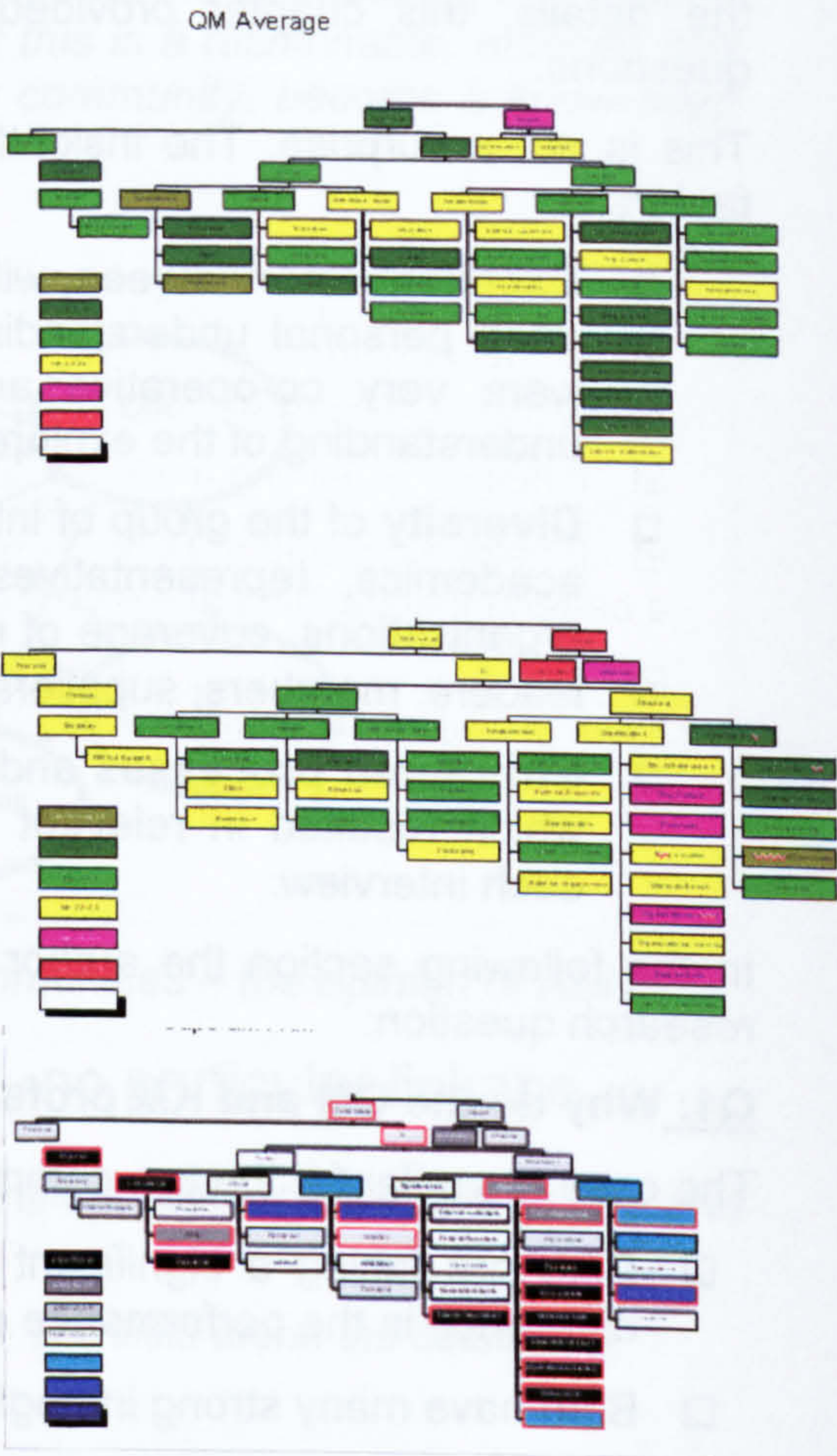
Motivation and Innovation were also particularly strong for KM, as opposed to relatively low scoring in the case of QM.

Experience, External Requirements, Process, Tool, Organisational structure and organisational Memory – all these were much higher in the case of QM.

**Q4: What are the potential flows of Intellectual Capital between the QM and KM professional communities?**

The IC maps were instrumental in surfacing many potential IC flows. In accordance with the superior IC of QM, more flows from QM to were suggested, compared to the flows in the opposite direction.

Most KM-to-QM flows were in the area of Innovation, Motivation and Renewal, while QM to KM flows were mostly in the area of organisational structure capital, but also in the





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area of Competences capital.

The analysis also found several bi-directional flows, i.e. cases where the two communities, could join forces to enhance an IC asset, which is both performed relatively poor on.

#### **Q7: Does the IC mapping methodology show utility as a research tool?**

After analysing the results of the methodology, i.e. the findings from applying it on the case of QM and KM professional communities via a set of 14 expert interviews, the author can make some observations about the utility of the methodology as a research tool.

Firstly, the IC mapping methodology did meet all of the design specifications (described in the previous chapter) and helped the author in researching the QM and KM communities and the interactions between them:

- ☑ It helped the author to explore and understand specific strengths and weaknesses of several specific QM and KM communities;
- ☑ It helped in gaining a deeper understanding of the “big picture”.
- ☑ It helped the author to aggregated data on specific communities, in order to gain a better understanding of the situation of the general QM and KM communities.
- ☑ The methodology also helped the author to analyse potential interactions and flows of intangible assets between the QM and KM professional communities.

Secondly, the findings from the feedback questionnaire (presented in Chapter 7) show that the interviewees agree that the methodology can help in performing the above functions.

Thirdly, the outcomes of the methodology, e.g. the significance of differences between ICs of different entities, can be tested numerically. Thus, the methodology can add reliable quantitative data to the research. This function was applied in the case of the current research.

Fourthly, the methodology confirmed many of the claims in the literature, but still led the author to some new insights on the situation of QM and KM and the interactions between them.

Finally, it is believed that the tool is transferable to other disciplines and areas as the design of the methodology and supporting tools did not include any features that are special and only applicable to the QM and KM communities.

Considering the above observations, the author concludes that the IC mapping methodology could be applicable as a research tool in the area of the assessment of intangible assets of professional communities and the interactions between such communities. Moreover, since it was already shown by other researchers that the IC concept is applicable to other types of entities e.g. nations, regions, commercial organisations and even individuals, the author believes that the IC mapping methodology might also be applicable to the research of such entities.



## 9 Computer-Aided Focus Groups

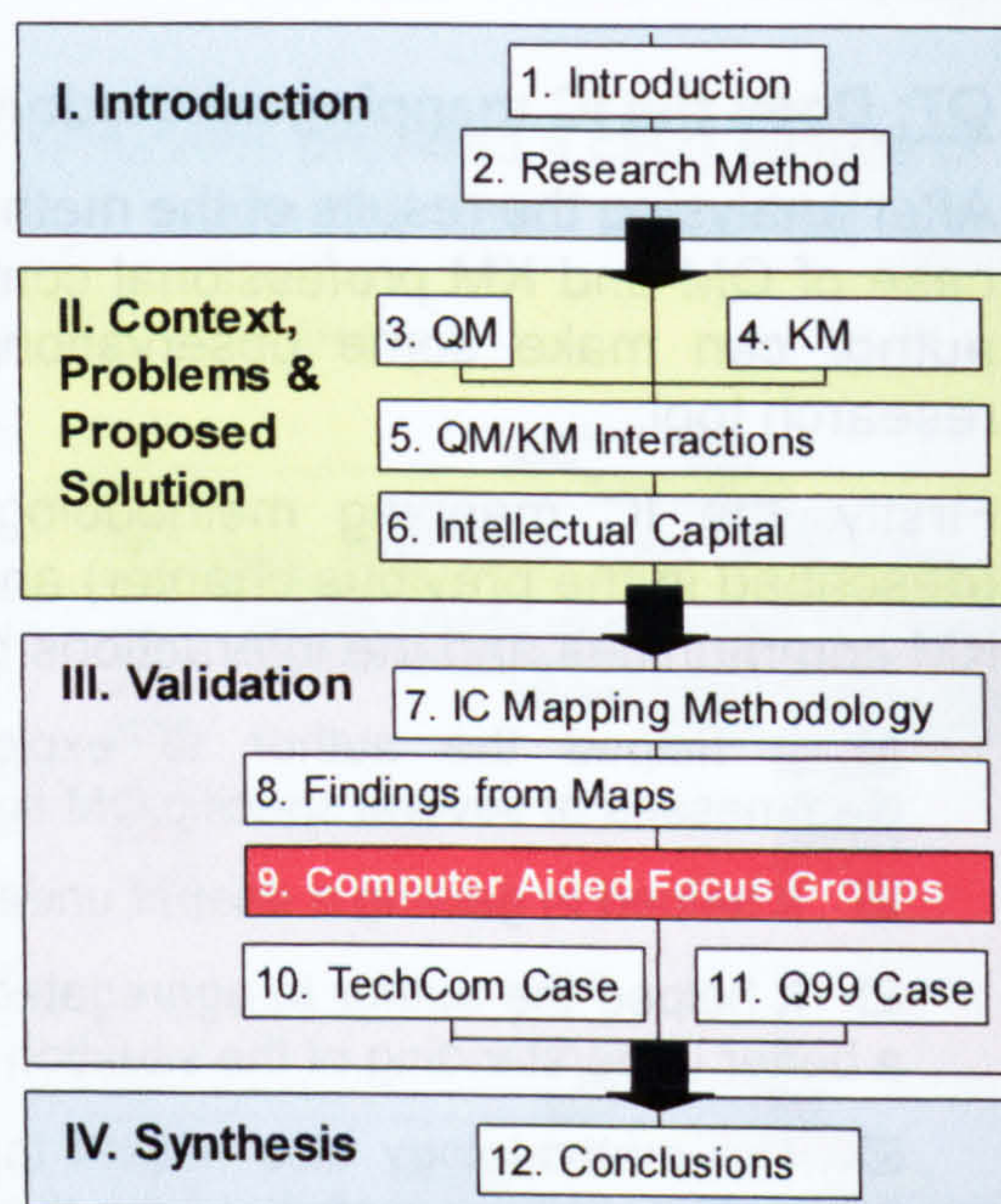
## 9.1 Aims

This chapter describes the way the author used Computer Aided Focus Groups to validate two research questions:

- ❑ Q1: Why do the QM and KM professional communities need to improve?
- ❑ Q2: What are the potential interactions between QM and KM professional communities?

After reading the chapter, the reader will:

- ☐ Understand why the Electronic Meeting tool was applied as a Computer Aided Focus Group, and selected as a research tool.
- ☐ Understand the process of operating the tool and processing its results.
- ☐ Have a review of the data collected by the tool.
- ☐ Understand how it contributes to the understanding of the research questions.



### Computer-Aided focus Group – the layout



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## 9.2 What are electronic meetings?

### 9.2.1 Description

Electronic meetings are technically different from conventional meetings in that each participant has the use of a personal computer (PC). The conceptual difference enabled by the use of PCs is the nature of interpersonal communication. In conventional meetings the communication is **sequential** – only one person speaks at a time (at least theoretically), to express ideas and opinions and feedback on contributions of others. In an electronic meeting, the communication is **parallel** – all participants can contribute to the evolving discussion at the same time (Waetherall and Nunamaker, 1995).

At the same time and in the same place all participants are located in a meeting room around a large table. Each participant is equipped with a PC loaded with the relevant software and linked to a local network, specifically set for the meeting. The PCs are for entering opinions, facts, suggestions or votes. They are used for typically 50% of the time. They assist in the communication process but do not reduce the meeting to silence – there is still plenty of discussions and conversation. A large screen is used to display the participants' input and other data. A printer is also connected, in order to provide immediate tangible output from the meeting. A facilitator helps with the flow of communication, but does not intervene with the content. A technician sets up the system and provides the technical support.

Electronic meetings can also be different time and different place events, based on communication over the web.

Each meeting is a series of *sessions*. During each session, questions, statements or subjects are sent to each PC. The participants type answers, ideas, feedback, comments or votes. These inputs become available to the other participants who can respond, feedback or build on them. The computerised communication is augmented by regular conversation between the participants. The figure in the cover page of this chapter, prepared for the Quality 99 conference publication poster, illustrates a typical session.

### 9.2.2 Benefits

The benefits of electronic meetings, compared to conventional ones, are multiple:

- ☐ Speed – the progress of the meeting towards its purpose is much faster. As a result the time required to complete a specific agenda is shorter.
- ☐ Opportunity – the process encourages and enables each participant to actively contribute ideas and opinions, encouraging the quieter less dominant members of the group to actively contribute.
- ☐ Shared inputs – each participant sees, in real time, the ideas of the other participants, and can build on them.
- ☐ Anonymous input – as opposed to a conventional meeting, all the inputs can be anonymous. This allows each idea to be evaluated on its own merits.
- ☐ Better and easier documentation – all the inputs are stored electronically, which allows an easy post-meeting documentation, reporting and analysis of the inputs.



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Other benefits mentioned in the literature – greater commitment, immediate actions, cash savings, more and better ideas (Waetherall and Nunamaker, 1995).

### 9.2.3 Business Applications

Electronic Meetings are applied to support diverse business activities. For example: Bellcore Labs uses them to conduct a Future Products focus group with customers and employees in order to involve them in the product design. IBM applies this tool to run Product Satisfaction focus groups with customers. KTAS, the Danish Telecom company, used it to support business process reengineering. The Danish Government used Electronic Meeting to build a vision of the future focused on “Information Society by the year 2000”. A group of 12 American Universities found the tool helpful in conducting a benchmarking project of several critical functions. The Managing Director of Anderson Cancer Centre applied the tool to the Vendors Selection process (Waetherall and Nunamaker, 1995).

## 9.3 Electronic Meeting as a research tool

The author needed a tool to understand the perceptions of a large number of QM and KM professionals regarding some of the research subjects. The author preferred the option of a focus group as a way to meet, converse and collect data from a large number of professionals. Once the opportunity to use the Electronic Meeting tool in the Quality 99 conference was presented, the author decided to use the technological platform for the focus groups. This would turn them into Computer Aided Focus Groups. The author believed that all the business benefits of the tool (listed above) are also relevant in a research context. The tool would:

- ☐ Enable the discussion of ideas with a large number of people
- ☐ Ensures that ideas and the feedback of each participant are captured anonymously.
- ☐ Track and analyse how those ideas develop during the discussion, i.e. the dynamics of their development.
- ☐ Capture both qualitative information (ideas, opinions) and quantitative data (scoring).
- ☐ Get a precise documentation of each idea and response.
- ☐ Facilitate a controlled data collection process.

Therefore, the Computer Aided Focus Group as a research tool combines the benefits and functionality of three data collection tools: interviews, focus groups and questionnaires. In the case of a part time Ph.D., the added benefit is that the tool is also very effective as it helps to obtain rich information from a large amount of people, relatively quickly.

An additional advantage relates to the nature of the research. Since it is (partially) action research, the capacity of the tool to increase commitment in change management processes could help in the efforts to engage participants with the idea of QM/KM interactions.

Finally, the novelty of the tool (participants have the opportunity to pioneer its first use in Israel) attracted many professionals to co-operate and to participate in this data collection effort.



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The disadvantage of the tool in the context of a Ph.D. research is the significant cost of organising an Electronic Meeting. There was a need to import the system and technicians from Europe for the meeting. This would have made it impractical to use the tool only for the sake of the research. However, an opportunity to organise a business-oriented meeting supported by the tool enabled the funding of the import of the system for two days.

## 9.4 The process

### 9.4.1 Preparations

The author agreed with the president of the Israeli Quality Association to include Computer Aided Focus Groups in the 1999 conference. The general subject – “the future of the quality community in the 21 century” was also agreed.

The next step was to secure the finance for importing the tool for a few days to Israel. One of the major Israeli banks agreed to sponsor this unique part of the conference. In return, the bank had the privilege of running an Electronic Meeting session the day after the conference, with the top bank management team as participants, and the future of the bank as the subject. The additional benefit for the bank was the reputation gained at the conference, as an innovative bank sponsoring innovative initiations.

Once the funding was secured, the author travelled to Denmark to meet with Electronic Meeting Services staff and became familiar with the tools', functions, and the possibilities it could offer. At this visit, the author was trained in using it. Assisted by Electronic Meeting functionality, the author designed the list of questions and series of sessions to be conducted in each meeting. The subjects had to serve both the research interests of the author and the objectives of the conference and its owner, namely the Israel Society for Quality. Therefore, the script of the meetings was presented to and approved by the representatives of ISQ.

The Computer Aided Focus Groups were widely advertised, in order to attract many participants to the conference in general and to the focus groups in particular. The focus group session was illustrated in the conference poster, and also described in detail in the conference web site and in the program sent to each registered conference participant. In order to predict the number of required focus groups, a pre-registration procedure was executed.

### 9.4.2 The focus group flow

A series of four, sequential, 90-minute focus groups were designed. Each focus group was structured into 18 short sessions; each lasting on average 5 minutes:

1. Introduction of the focus group overall agenda and objectives.
2. Introduction of the concept, benefits and functionality of electronic meetings.
3. Introduction of the participants (and first interaction with the computer): inputting participant's name, company, email and role.
4. **SCORING:** *“The importance of the QM manager roles” (round I)* – scoring of 9 possible roles. The list was created in advance by the author, and included both the conventional roles (e.g. training for quality) and the less obvious potential roles such as Knowledge Management). Each participant needed to score how important each role it. A 1-4 scale was used.
5. **BRAINSTORMING:** *“The Quality manager in the 21<sup>st</sup> century – a must or a traditional unnecessary overhead?”* This question mirrors concerns in the literature regarding the survival of QM (e.g. Watson 2000).



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6. **BRAINSTORMING:** *"what are the necessary outputs and activities critical to the company's success, which must be managed by the quality manager?"* This would help to monitor the perceptions of the participants on critical roles, when they are not forced to respond to a pre-prepared list provided in session #4.
  7. **BRAINSTORMING:** *"What are the alternatives for the quality manager (self responsibility? Integration into other managers' roles? Etc.)"*. This question would point toward perceptions regarding different interaction types with other professional areas.
  8. **BRAINSTORMING:** *"what should be the main roles of the quality manager in the 21 century?"* The objective was to invite the participants to brainstorm roles, which are not necessarily linked to what the QM managers do today.
  9. **BRAINSTORMING:** *"Should the quality manager become the Chief Knowledge Manager?"* This question is more direct than the previous ones. It means to assess the interest of the QM people to take charge of the new KM domain.
  10. **SCORING:** *"The importance of the QM manager roles" (round II)*. Same list as in session 4. The objective was to see whether perceptions of the participants were changed as a result of the evolving discussion, and possibly insights gained in the previous sessions.
  11. **BRAINSTORMING:** *How should the quality manager react to:*
    - o *Rapid change in technology*
    - o *Change in the market place*
  12. **BRAINSTORMING:** Outsourcing quality? The subject of outsourcing support functions is widely discussed and examined by many organisations, and ISQ was interested to identify if there were emerging trends toward this direction in the quality domain.
  13. **BRAINSTORMING and SCORING:** *"How will the quality manager become a critical part of the company development and success?"* Proposed answers have been scored. This session refers to the authors' hypothesis on the low impact of the quality community.
  14. **BRAINSTORMING:** *"How to make money from quality?"* This question refers to one of the hypothesised weaknesses of the QM community as a cost centre, not revenue generator.
  15. **BRAINSTORMING:** *"what should be the interactions between the quality manager and the company top management?"* Here the author tested the common complaint of many quality professionals that "the top management is not committed to quality, so how can one succeed?"
  16. **SCORING:** *"The importance of the QM manager roles" (round III)*. Same list as in session 4. The objective was to see whether perceptions of the participants were changed as a result of the evolving discussion, and possibly insights gained in the previous sessions.
  17. **FEEDBACK:**
    - o *"positive comments to the focus groups",*
    - o *"negative comments"*
    - o *Rating of the process*
    - o *Rating of the tools*
  18. **CLOSURE:** Thank-you by the facilitator.

The facilitator provided the technical training on the day, so there was no need for a separate training session.

After the conference, the full documentation of each focus group was e-mailed to all participants.

An experienced Electronic Meeting facilitator, assisted by a technician, facilitated the focus groups. The author provided detailed guidance before the conference, and also before each focus group, and during the breaks between focus groups. These breaks offered an opportunity to discuss and resolve mostly technical issues, such as tactics to overcome language problems. It was decided not to change the structure of the sessions. The author did not intervene during the focus groups themselves.



**Terminology Comment:** as the subject of the questions, the author had to choose between several options: Quality Managers, Quality Departments, and Quality Professionals. As the research is focused on QM communities, and so is the business problem, the term “Quality Manager” was chosen. The reason being that the author thought it would be easier for the participants (most of them were quality managers) to relate to this term, and when doing so it would indirectly cover the QM community.

### 9.4.3 Participants

The planned capacity of the focus groups was 60 participants (4 focus groups, 15 laptops in each). Due to the great interest, 68 people actually participated, and in some cases a pair of participants shared one computer, but logged on as different users.

As expected, most of the participants belonged to the QM community, as shown in the following table:

Role	Number of participants
Quality manager	32
Quality Consultant	10
Quality engineer	9
Professional – other areas	8
Manager	4

Table 9-1: The participants’ roles

Post focus group examination of the list revealed that most of the non-QM professionals came from the KM domain. Therefore, both the QM and KM communities were represented, as well as several general managers, who (should) have an overall view on both areas.

## 9.5 Data and findings

### 9.5.1 Roles of QM

The participants were asked, at the beginning (round 1), middle (round 2) and end (round 3) of the focus group to score the importance of 9 possible roles of QM.

A 1-4 scale was used (1-not our role, 2-not important, 3-important, 4-critical).

The following graphs show the mean responses of all participants from all four focus groups (n=68).



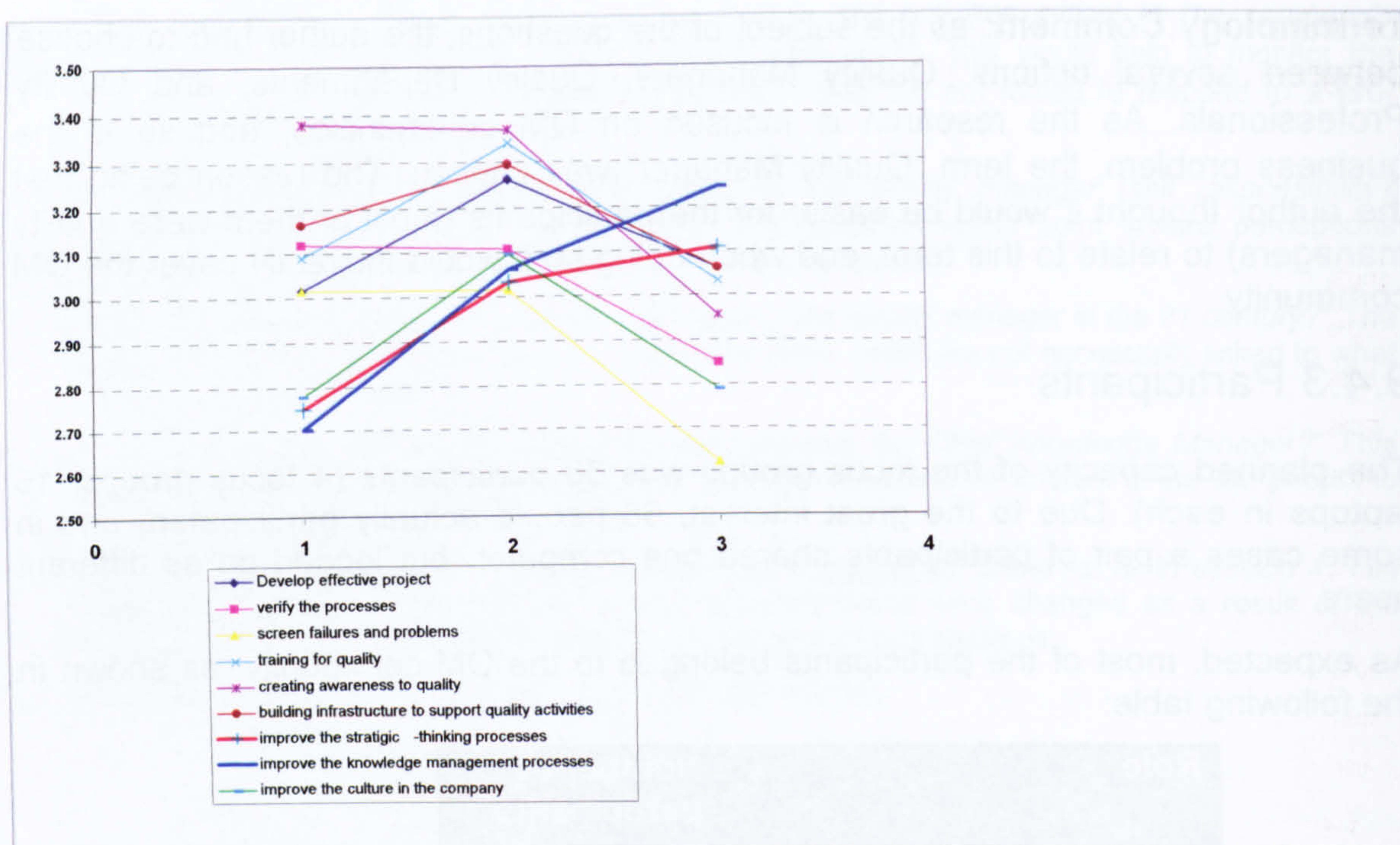


Figure 9-1: Focus group findings: roles of QM

## Discussion

The data implies that:

- ❑ At the start of the focus group, the more traditional roles of QM were scored the most important ones. These are process verification (audits), screening (quality control), training for quality, awareness creation and infrastructure creation (e.g. data collection systems).
- ❑ The roles that have been scored as less important ones are the less traditional ones: KM, support to strategy creation processes and general company culture improvement.
- ❑ As the discussion evolved during the work, and participants had discussed various aspects of the future, challenges and threats of the QM community, the above scoring was **reversed**: the traditional roles were scored the lowest (and the most traditional one, screening, was scored the lowest of all). The new proposed roles were scored as the most important ones: KM first and Strategy support second.

A similar pattern derived from the accumulation of data of all four focus groups was found also at the individual focus group level.

## Focus on KM

The perception of KM as a role of the QM community is looked at here in greater detail. At round one, almost half of the participants thought that KM was not at all or hardly relevant to (answers 1 and 2 = red and yellow). Considering that the participants were exposed to significant “propaganda” on the link between QM and KM before coming to the focus group (through the conference program documentation, the keynote lectures at the opening session of the conference etc.) this percentage is particularly low.

As the focus group progressed, many participants changed their scoring and scored KM higher. At the end of the focus group, only 16% thought that KM was not relevant



or important to QM. Moreover, the percentage of participants scoring KM as critical (4=green) increased from 25% to 48%.

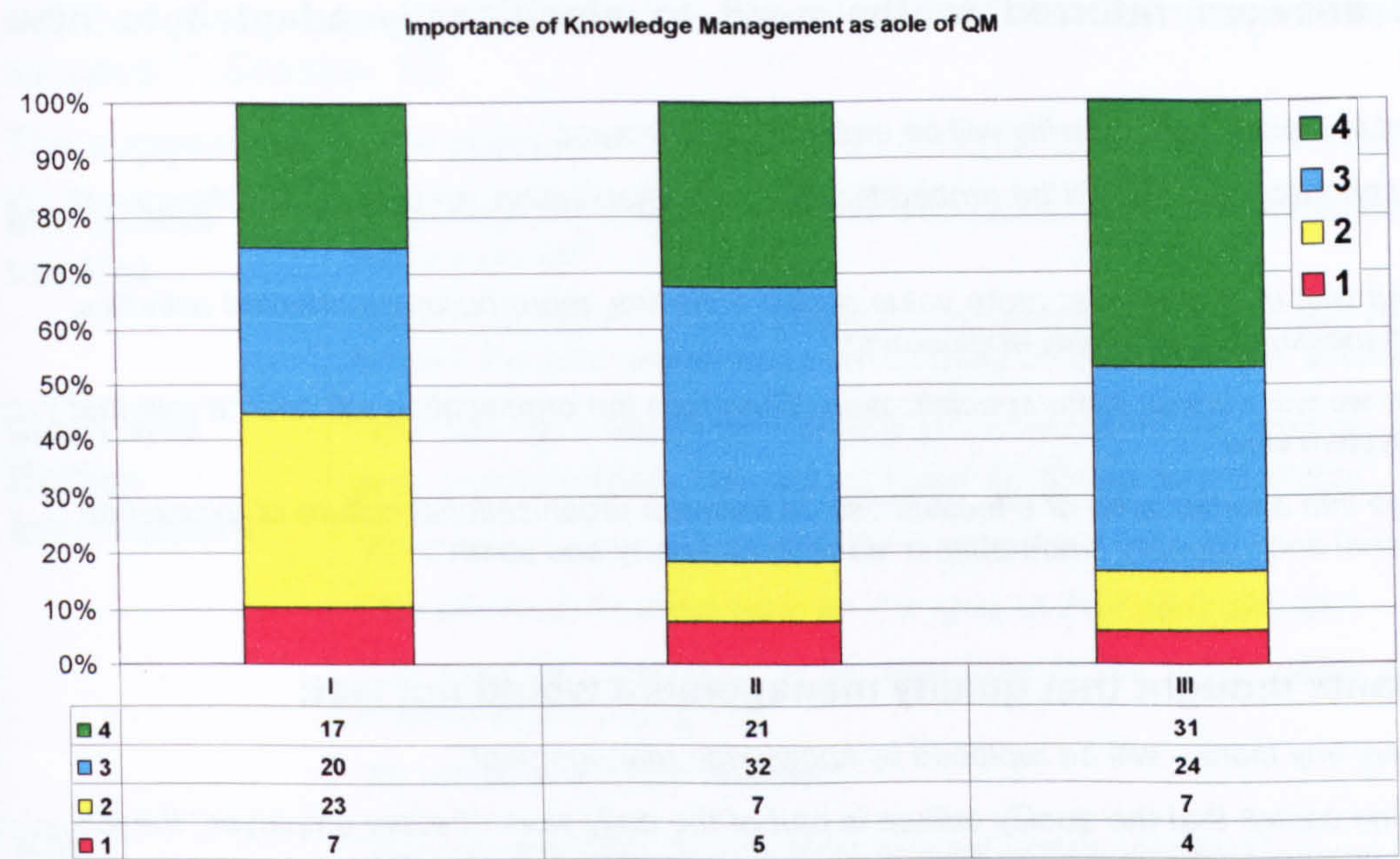


Figure 9-2: KM as a role of QM

Discussion

Unless triggered to think differently, QM professionals are captured by the traditional role allocation. They do not see KM as a critical element of their scope of work. However, once they are exposed to the idea and also have the opportunity to discuss its relevancy, they do discover the importance of KM.

9.5.2 Sustainability of QM

The author asks two questions, which are related to the sustainability of QM as a separate community:

- Is the function of QM a must, or a traditionally unnecessary overhead (implying that it might disappear) (session 5)?
- What are the alternatives to the quality manager (session 7)?

Out of about 80 answers to the first question, 70% indicated that the function is a must. Some representative answered:

*"In Israel it is a must, since the awareness to quality here is not high enough"*

*"The quality manager will always be essential since his background covers many disciplines and he can adapt to many important roles which might emerge"*

*"Every subject must have a manager and a leader"*

*"This will be a basic need in each organisation"*

*"Quality will always be a must"*

*"Quality has a distinct role"*

*"Sure, because the world is coming a customer-oriented".*

*"Yes, because time to time becomes shorter".*



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*"ISO 9000, TL 9000 etc. will keep some activity while process improvement will fill the rest".*

*"Somebody has to keep an eye on the system".*

**20% of the answers referred to the need to significantly adapt it to new challenges:**

*"Not needed in many cases. Quality will be embedded in process".*

*"Quality is important, but should be embedded into the organisation, so that the overheads will disappear".*

*"A must – but with changing role: more value added activities, more business oriented activities, emphasis on measures and quality engineering".*

*"In the future we will witness more specialization. Therefore the organisation will need a role that will have a system view".*

*"It will change into another area of effectiveness: to develop organisational culture of excellence, transformational and visionary leadership, a learning company and so on".*

**Few participants thought that quality management would not last:**

*"Not necessary any more – will be replaced by knowledge management".*

*"When the time comes that the quality culture is part of the daily work of every employee, the job of the quality manager will come to an end".*

*"Will become an unnecessary overhead since we will implement the self responsibility methodology"*

*"When all employees will be educated to think quality it may turn into an unnecessary job, or to be more exact: the general manager will be the quality manager"*

*"I heard that you could train a dog to replace a quality manager"*

**Discussion:**

Most of the focus group participants (70%) believe that the discipline is very sustainable. As opposed to some suggestions in the literature (Watson, 2000) there is no significant concern about the survival of QM.

Some professionals (20%) maintained that QM needs to exist, but it needs to adapt itself to the new business circumstances and needs.

Fewer people (10%) raised the idea that QM needs to be gradually embedded and absorbed in the culture and daily operations of the organisation.

### **9.5.3 Problems and challenges of QM**

The focus group participants provided many statements about their frustrations and difficulties they face. Those inputs were distributed in their answers to different questions. Some inputs which support or add on challenges identified in the literature are:

**Bypass** – *"I already see a tendency from the management side to say that the line managers are responsible for everything in their area, including the product quality, and the quality manager is frequently bypassed. So when do they need the QM manager? Usually when it is too late, and quality management is out of hand".*

**Lack of appreciation** – *"the role of the quality management cannot be over emphasised, but only where he or she is appreciated. We are facing a malady of management perception of the role".*



## 9.5.4 How can QM strengthen its impact?

To understand the opinions of the participants on this issue, the author asked: *"How will the quality manager become a critical part of the company development and success?"* (Session 13).

The suggestions of the participants have been categorised into the following groups:

<b>More/Less control</b>	<p><i>Controlling the different activities and assuring the quality in each operation or product design".</i></p> <p><i>"He should HELP!!! The company's employees, customers and vendors, not force himself. But also preserve a small amount of "quality Police" activities".</i></p>
<b>More and Earlier involvement</b>	<p><i>"The QM input will come into play much earlier in the process, at the design or even concept phase. This will put larger emphasis on prevention".</i></p> <p><i>"Be involved in every aspect of the company".</i></p> <p><i>"The QM must be involved in all changes, at their early phases"</i></p> <p><i>"QM must be connected to all processes in the organisation, in order to react properly to any change".</i></p> <p><i>"Be visible and action oriented".</i></p>
<b>KM</b>	<p><i>"Become the CKO, to gain more respect and cooperation".</i></p> <p><i>"Through mediating and transfer of tacit knowledge in the organisation".</i></p> <p><i>"Manage the Knowledge in the organisation".</i></p> <p><i>"QM needs to keep the keys to the information gates". (the response of another participant to this suggestion: "this is very dangerous!!!").</i></p>
<b>Contribution to organisational goals</b>	<p><i>"If the QM activity helps the company to achieve its goals, then the Quality manager becomes an important part of the company success".</i></p> <p><i>"He should prove that his knowledge help the company be better in achieving it's goals".</i></p> <p><i>"Implement the quality cost methodology".</i></p> <p><i>"By showing his fellows how quality assurance enables growth of profitability and revenues".</i></p>
<b>Deeper understanding of the context</b>	<p><i>"First of all you should know your company, its problems, its successes etc".</i></p>
<b>Organisational Position</b>	<p><i>"Report directly to the top management" (another participant reacted" the question is whether the top management is ready to listen to any comments...").</i></p> <p><i>"QM should be connected directly to the top management and not decentralized to the specific divisions"</i></p> <p><i>"The CEO should be the quality manager".</i></p> <p><i>"By first securing the support of the CEO to all improvement initiatives".</i></p> <p><i>"QM needs a representative in every unit".</i></p> <p><i>Top quality is a business function; QM is a service to this function, not a part of it. Top management should not delegate its responsibility to quality by making it a top management function".</i></p> <p><i>"Hold the management at the...by mirroring the cost of their poor quality"</i></p> <p><i>"Takes risks and lead, not act only as an advisor" "QM must not be an advisor, otherwise they will act as a cat without balls that is crying every night but does nothing".</i></p>
<b>Self</b>	<p><i>"Quality Management should set quality goals for itself and be subjected to feedback, otherwise the quality people loose their quality".</i></p>



<b>Improvement</b>	
<b>Skills</b>	<p><i>"Upgrade his skills, learn, and study the changes in the environment".</i></p> <p><i>"Be up to date with any discipline related to quality".</i></p> <p><i>"He must learn the technology thoroughly" (Another participant responded: "Why do you say 'he' all the time? I am SHE!!")</i></p>
<b>QM &amp; Marketing</b>	<p><i>"Be attentive to new trends in the markets"</i></p> <p><i>"Be ahead of expressed market needs, and try to forecast them"</i></p>
<b>Scope of activity</b>	<p><i>"Become responsible for integration issues"</i></p> <p><i>"First of all they should create a culture of quality in everyday life. This is the most difficult task".</i></p> <p>Many responses referred to the need to focus on the traditional QM areas (<i>"report the organisational performance", "reduce poor quality costs", "statistical analysis of data", applying the technologies of quality"</i> etc.). For example:</p> <p><i>"QM must be very careful not trying to do other people's jobs and responsibilities"</i></p>

Table 9-2: How can QM strengthen its impact?

### Discussion:

According to the focus group participants, there is room for improving the impact of QM, and many had concrete ideas on how to do that. Some of these ideas were not aligned with each other, and offered contradictory directions (for example some suggested that QM should seek more control, and others suggested the opposite; some suggested that QM should increase its scope, and others that it should focus on a limited one).

However, the author found two commonalities between the responses:

- ☐ There is a need to improve.
- ☐ Most of the suggestions address the need to make QM more relevant to the needs of the organisation and hold a more central position in it. This can be done by getting involved earlier in the value-creation process, by having better organisational QM structures, by impacting the day-to-day culture, by being up to date with the latest disciplines, by putting it higher in the organisational hierarchy etc.

### 9.5.5 QM Critical roles, activities and outputs

The participants talked about the roles, activities and outputs of QM. As opposed to the previous session where they responded and scored the roles proposed by the author, here they actively suggest their own ideas.

The results have been classified into 5 categories, using the roles and activities definition found in the literature (Green, 1993 and Earl, 2000):



Category	Suggested roles and outputs
1. Classic QM roles	Adherence to standards, Processes control, Processes evaluation, improve the product development processes, increase awareness to quality, assure design trace ability, linking quality to profits, continuous improvement, procedures, verify processes, guidance in quality issues, managing the quality records, certification to quality certificates, measure quality costs, coaching improvement teams, monitoring the organisation's activities, selecting work methods, managing quality programs, provide external control loop, coach quality issues, creates quality-oriented work environment, creates the management-by-facts habits, quality planning, quality engineering, cover the QM issues in proposals, quality checking, performance measurement, failures reports, prevention activities, introduce quality to R&D processes, manage the quality costs, qualification approvals, introduction of methodologies (like QFD, Value engineering, concurrent engineering, robust design), tracking and improving customer satisfaction, analyse customer needs, auditing, supporting robust design, facilitation of teams, training quality concepts and tools, balance scorecards, managing standards, facilitating multi-disciplinary teams, introducing concurrent engineering, design reviews, "quality police", managing the quality systems, defining the quality related tasks of each function, promoting the quality ideas, reduction of rework and scrap, inspection activities, handle none-confirming products, design verification, manage reliability, maintainability and testability, compliance to standards.  <i>Comment: several identical suggestions (i.e. same terminology) have been listed in the table only once</i>
2. Classic KM Roles	Organisational memory, ensure that technological SOA (State Of Art) position, filtering data, mapping which knowledge needed for each core business process, knowledge management.
3. Frequently Attributed to both QM and KM	Benchmarking, lessons learned.
4. Usually attributed to other professional communities (mentioned in brackets)	Reading the market (marketing), study and understand customers needs (marketing), training (Human Resources), Improve engineering design (R&D), vision creation (top management), strategy planning (strategic planning or top management), develop transformational leadership, implement effective learning (HR), stimulating leadership (top management), improve management skills (HR), data management (IT).
5. General roles common to many corporate staff	Increase competitiveness, cost reduction, improve long range profits, ensure customer satisfaction, integration of all organisational functions and activities, integration of tasks and technologies, improve the organisational culture, speed response rate to changes in the environment,

Table 9-3: Critical roles suggested by the participants

## Discussion

Most participants suggested that the critical roles rest within the traditional scope of QM (**category I**). These are the roles described in the classic QM handbooks (Greene, 1993). These can be classified into the older focus on control (auditing, reviews)

Very few suggestions (**category II**, 5 out of 86 suggestions) refer to the roles included scope of KM, as commonly described in the KM literature (Allee, 1999 and Earl, 1999). Few additional roles (**category III**) were traditionally handled by the QM community and now are included in the KM scope (Wij, 2000 ). These are Lessons Learned and Benchmarking.

Several participants offered roles that are usually included in the scope of other professional communities, e.g. the HR, IT, Strategic Planning and Marketing



communities (category IV). This shows that those roles are diffused not only between QM and KM but also between QM and other support functions.

Several participants chose to suggest general roles, which are common to several support or even operational functions (category V). Roles such as "improve profitability" or "increase customer satisfaction" can be found not only in the vision statements of the QM community (Baldrige, 1998) but also in the descriptions of the overall objectives of the KM community (Saint-Onge, 1999). This commonality suggests that QM and KM share some common organisational goals.

It is perhaps appropriate to conclude this section by a statement by one the participants in focus group #2, who refused to offer specific roles: *"Each organisation needs to define its own list of roles for QM"*.

#### 9.5.6 Should the Quality Manager become the Chief Knowledge Officer?

This question was asked in order to add an additional angle on the way the interactions with KM are perceived by the QM community. The responses to this open question are categorised into the following three groups. Only a sample of the answers is given.

**NO** – this is not QM business, or not a valid discipline:

*"KM must not be centralised".*

*"Not necessarily".*

*"Absolutely not"*

*"There is not connection between the two jobs".*

*"This is the latest fad, and will go away very soon because it will not contribute to the strategic and operational needs of the company. It is a "nice to have" until the next crisis when we will have to focus on pure added value activities".*

*"I doubt it; in a large organisation one person won't be able to handle of the knowledge".*

*"The knowledge manager should be a database, not a person! No need to find the quality manager extra jobs".*

**NO, but:** they should not manage the knowledge or the KM program, but should be involved:

*"Absolutely not- each manager needs to be the CKO of his unit. The quality manager can provide him with the tools to do the job, and ensure he does"*

*"QM needs to focus on guiding managers and employees the principles that are important for Knowledge Management".*

*"QM and KM are two different jobs. I can see the relations between the two roles, but they are not united".*

*"No, but they need to work closely together as there is a reciprocal influence. Knowledge needs to be tested for quality, and quality needs knowledge as input".*

*"Not necessarily, but the potential exists".*

*"No, he should not become the chief of anything. But he should be involved in KM activities in the same way he is involved in manufacturing management, R&D management or any other function".*

**YES:**

*"This is the only chance of the organisation, and CKO will become the most important job in any organisation"*



*"Yes, because the first tool which ensures management success is the quality of information and knowledge, and its sharing".*

*"Yes, but only as part of the QM job description"*

*"Yes. He is by definition a sort of junction where all the different activities are inked, so it is only natural that he becomes the CKO".*

*"If he is talented enough". (Response b y another participant: " a good answer, of course she is!")*

*"The QM notices, as part of his job, all the problems in the R&D and other processes. This is why he is most suitable for this job".*

*"Yes, if the need is recognized by the organisation"*

*"He has to focus on the main areas of knowledge needed to achieve the organisation's goals"*

*"Controlling quality means that the best knowledge is applied in the most consistent way. QM needs to ensure this".*

*"Yes, he has to make the knowledge accessible to everybody and provide the tools to better use the information".*

*"Only if he or she gets paid more!!"*

*"Maybe! Any task that is not part of the regular line activities is acceptable".*

*"Yes, it is a good idea for the quality manager to become the CKO, in order to gain more respect".*

### Summary

There were 49 responses, distributed as following:

I. No: 21 (43%)

II. No, but: 13 (26%)

III. Yes: 15 (31%)

Most of the participants thought the KM is linked to QM roles and activities (group II); or strongly linked to QM and needs to be led by QM (group III). It is interesting to note that several responses framed KM as a control activity (as opposed to the common approach to KM), and hence the link to QM.

Those who belonged to group I either thought that KM is a fad, not related at all to QM, or should not be managed by a specific organisational function.

### 9.5.7 QM and KM interactions

Some of the responses to the questions above reflected directly or indirectly the opinions of the focus group participants (of which most are QM community members) on the interactions between QM and KM. The author categorised them into the typology of 12 possible interaction patterns between professional communities.

Pattern	Sample quotes
No interactions	<i>"There is not a connection between the two jobs (of QM and KM)"</i> <i>"No need to find the quality manager extra jobs".</i>
Confrontation	<i>"This (KM) is the latest fad, and will go away very soon because it will not contribute to the strategic and operational needs of the company. It is a "nice to have" until the next crisis when we will have to focus on pure added value activities"</i>
Overlapping	Many of the QM roles, as suggested by the participants, are also frequently practiced by KM. For example: <i>"Organisational memory", "filtering data", "mapping which knowledge needed for each core business process", "benchmarking", "and lessons learned".</i>



Take over	See responses in the "Convergence" category, which might refer also to "take over".
Replacement	<i>"(QM is) Not necessary any more – will be replaced by knowledge management"</i>
Fading away and been embedded	KM: <i>Each manager needs to be the CKO of his unit.</i> QM: <i>"when the time comes that the quality culture is part of the daily work of every employee, the job of the quality manager will come to an end".</i> <i>"(QM) will become an unnecessary overhead since we will implement the self responsibility methodology".</i>
Emergence	No reference.
Convergence	Several positive answers to the question "should the QM manager become the CKO" pointed towards convergence or take over. For example: <i>"Yes, because the first tool which ensures management success is the quality of information and knowledge, and its sharing".</i> <i>"Yes, but only as part of the QM job description"</i> <i>"Controlling quality means that the best knowledge is applied in the most consistent way. QM needs to ensure this".</i> <i>"QM needs to keep the keys to the information gates".</i>
Co-operation Learning	I: <i>"QM needs to focus on guiding managers and employees the principles that are important for KM".</i> <i>"(QM needs to) be up to date with any discipline related to quality".</i>
Co-operation Support	II: <i>"QM and KM are two different jobs. I can see the relations between the two roles, but they are not united".</i> <i>"They (QM and KM) need to work closely together as there is a reciprocal influence.</i> <i>"He (QM) should be involved in KM activities in the same way he is involved in manufacturing management, R&amp;D management or any other function".</i>
Co-operation Sharing	III: Some of the responses categorised as "support", "learning" and "working together" can be also mapped against the "sharing" co-operation pattern.
Co-operation working together toward a common objective	IV: <i>"They (QM and KM) need to work closely together as there is a reciprocal influence".</i>

*Table 9-4: Interactions of QM and KM according to responses at the focus groups*

### 9.5.8 The focus group Process

The participants were asked to rate the quality of the focus group process, using 1-10 scale (10=Excellent, 1 – Poor). Results are shown in the following chart.

The mean was 7.35, and the most frequent response was 8. This positive (but not overwhelmingly positive) response suggests that the participants enjoyed and appreciated the process as an effective brainstorming and discussion tool – but were not completely satisfied with certain aspects of it.

The participants were asked to rate the quality of the complementary issue – the technical and user friendliness aspects of the computerised tool. Results are shown in Figure 63.

Many participants provided positive comments about the benefits of the process (and tool) as they experienced them:

*"Intriguing approach for group focus group, encourages comprehensive thinking about the role of the QM manager"*

*"Very effective in analysing results of brainstorming"*

*"I learned something new and interesting"*



*“An effective way to overcome resistance of managers to the best ways of making progress by good decisions”*

*“Enables a productive discussion between peers who are far apart”*

Going through the complete list of responses provided an interesting observation – the participants have themselves “discovered” most of the benefits and potential uses of the process and tool listed in the literature. This was a result of experiencing it, not from hearing the facilitator talking about it (in fact, this observation is augmented by data provided in the next section, namely that the main criticism was that the facilitator did not introduce the tool benefits as part of the introduction).

Many of the critical comments referred to the introduction part, which did not provide enough methodological and theoretical information about Electronic Meetings. One of the objectives of the participants was to learn about the tool and evaluate its suitability to their activities. For example:

*“There was not enough explanations on the benefits of the tool. Is it just a technical tool, or are there deeper ideas behind it?”*

*“No real overview of the product and its capabilities”.*

Several participants talked about the need to extend the focus group’s length:

*“It was too short. I suggest planning at least three hours”*

Several participants provided some improvement suggestions – which is only natural considering their background as quality managers. For example:

*“Integration of several answers might be the best one. This feature was not introduced”*

**The Computerised Tool**

The mean was 8.2, and the most frequent responses were 8 and 9. This positive response suggests that the participants enjoyed the use of the tool – but still had some criticisms toward it.

The online-real-time featured of the tool has been well appreciated.

*“Effective meeting, as result of real time data processing”*

*“The computerised documentation allows to collect all data, without losing any contribution”*

However, most of the criticisms were about the slow response time of the system.

*“Slow response of the server, which imposes delays in the flow”*

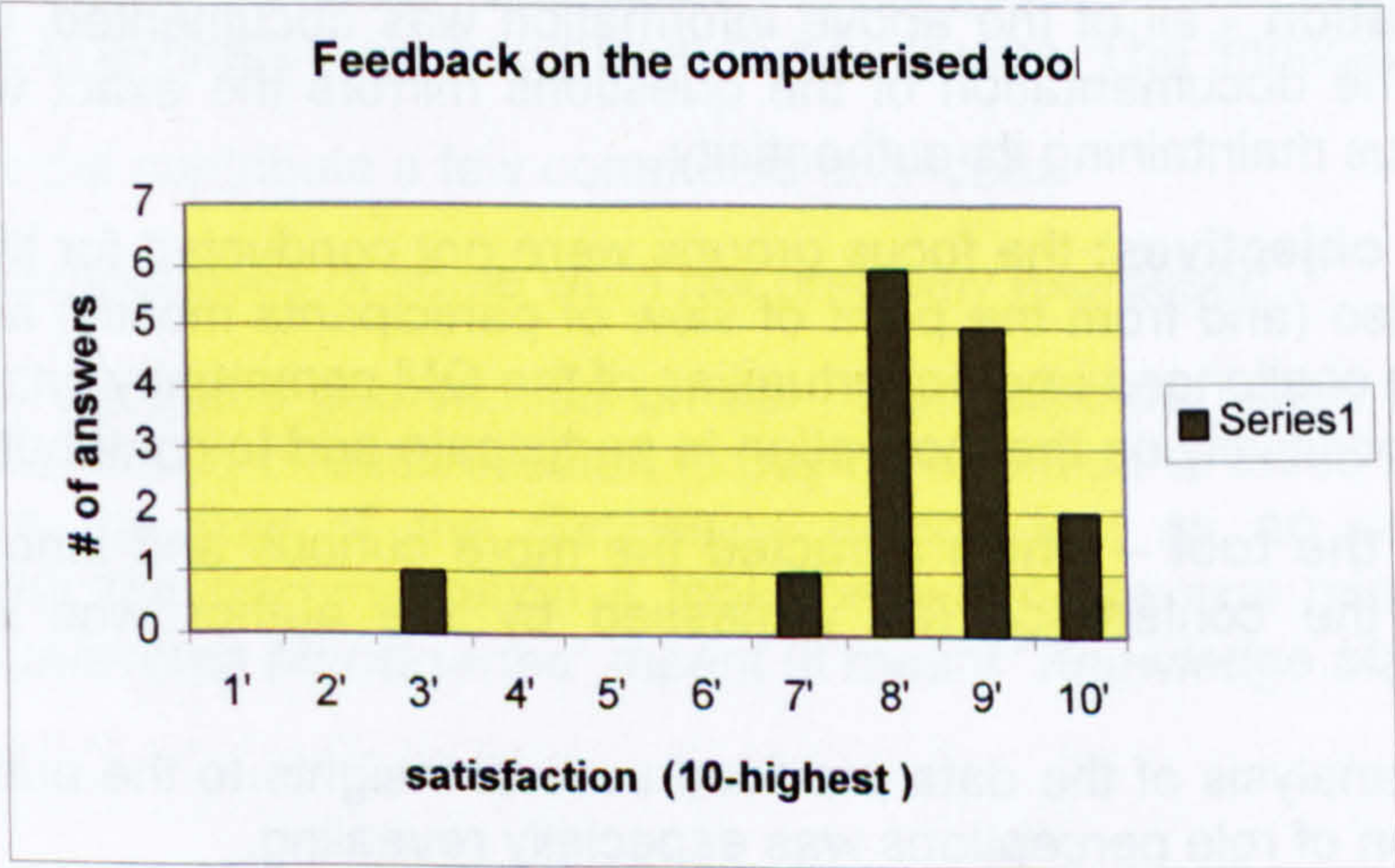


Figure 9-3: Satisfaction with the tool



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## **Epilogue**

After each focus group, several business cards were exchanged between the facilitators (who represented ConsensusGroup, the company organising Electronic meetings) and interested participants. However, this interest did not yield more cases in which the system was imported again and used in the participants' organisations. How can this be explained, considering the positive feedback provided by the participants, many of them are quality managers (or knowledge managers) who are responsible for bringing new methodologies to their organisations? The author proposes that this is due to the very high cost – beyond the authority of the quality/knowledge manager. It is not easy to justify this cost to decisions makers who did not personally experience the benefits of the focus group.

## **9.6 Strengths and Weaknesses of the case**

In the following section, the author discusses the advantages and disadvantages of using the computer aided focus group as a research tool to learn about the QM/KM interactions.

The author found it necessary to include some characteristics in both lists – since they represented both strengths and weaknesses/risks at the same time.

Since it was a one-off event, there was no way to refine the procedure in order to avoid some of the weaknesses in a 2<sup>nd</sup> round. Moreover, most of the weaknesses are inherent in the electronic brainstorming methodology itself. However, the author believes that the strengths of the case, combined with the opportunity to triangulate the findings by several other research tools, compensate for these weaknesses.

### **9.6.1 Strengths of the case**

- ☑ **Scale:** The case surveyed the perceptions of a large number of relevant professionals (n-68).
- ☑ **Diversity:** The participants came from diverse backgrounds – all relevant: QM professionals, KM professionals, and general managers.
- ☑ **Anonymity** encouraged each participant to contribute ideas and allowed free expression of opinions. This enabled unheard voices to speak up.
- ☑ **Richness of information:** the tool helped to speed up communication, which provided a large amount of information to be gathered. Overall, more than 400 opinions, ideas, comments and statements were exchanged and documented.
- ☑ **Documentation** - all of the above information was documented, which allowed full analysis. The documentation of the questions mirrors the exact wording of the participants, thus maintaining its authenticity.
- ☑ **Combined objectives:** the focus groups were not conducted for the sake of the research but also (and from the point of view of participants mostly) as a vehicle to discuss serious challenges and opportunities of the QM community and its members. This impacted positively on the motivation to participate and to contribute.
- ☑ **Novelty of the tool** – which attracted the more curious and innovative people who came to the conference (as witnessed by the author who observed the participants).
- ☑ **Insights** – analysis of the data provided several insights to the author. The look into the evolution of role perceptions was especially revealing.



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## 9.6.2 Weakness of the case

☒ **Timing** – the focus groups were planned and conducted in November 1999, when the research questions and framework were not mature. This implies that if the focus group had been conducted a year later the questions could have been more specifically directed to the research questions. The use of the term “Quality Manager” and not the more accurate (in the context of this specific research) “QM community” term, results partially from this factor.

☒ **Cost** – due to the cost involved, it was not possible to repeat the focus group procedure at a later research period or apply it in complementary events, e.g. in a KM conference.

☒ **Scope** – the focus groups were focused on the perceptions of the QM community members who formed the majority of the participants. The opinions of the KM people received less significance.

☒ **Background knowledge**: while some participants were very familiar with the concept of KM, others were being introduced to this term during the focus group for the first time. Therefore, some answered questions related to KM using their intuition, without understanding its full meaning.

☒ **Combined business/research objectives** – this factor was listed earlier as an advantage. The disadvantage is that it implied that the author could not include some of the direct research questions, in order to leave enough room for research which is interesting to the participants but not necessarily a contribution to the research.

☒ **Anonymity** – this was indicated in the previous section as an advantage. However, it also represents a weakness – there was no way, at the data phase, to separate the ideas or votes of the QM people from the ones of the KM professionals or the general managers.

☒ **Group thinking** – all the responses were visible to all participants, on a real time basis. This might lead to strong group thinking phenomenon and a bias of some participants to conform to opinions of the other focus group member. For example, in focus group #2, all 6 responses to the question “should the QM become the CKO?” were been identical – NO. One possible explanation – 5 participants were strongly influenced by the bold statement of the first respondent who referred to KM as “the latest fad”.

☒ **Language** – while some participants do possess good English skills, many others found it difficult to express their thoughts in this language. The implications:

- Some did contribute a few comments and ideas
- The contributions of some were not precisely expressed.

As to spelling and grammatical errors – the facilitator guided the participants at the beginning of each session to pay no attention to these issues, in order to keep the flow of the discussion going. Just as an anecdote, when analysing the documentation it took the author several minutes to realise what “*Cnoleheg Mantinanec*” meant (it meant “*Knowledge Maintenance*”).



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## 9.7 Synthesis and Conclusions

In this section the author has synthesised the findings from the responses to the different questions discussed in the focus groups, and linked them with two of the research questions and the knowledge obtained through literature survey.

### 9.7.1 Challenges of QM

The data confirmed many of the points collected in the literature regarding the need of the QM community to leverage itself (Research Question 1).

There was no specific question addressing the challenges facing the QM community or discipline. However, several contributions to the various questions did refer to some of the weaknesses identified also in the literature survey:

- QM is not respected and appreciated by top management, and does not win enough support and involvement.
- QM is not contributing enough to the strategic goals of the organisation.
- QM is not connected to the mainstream activities and operations.
- QM is an overhead, not profit centre.
- QM is too concerned with “policing” and control.
- QM does not renew itself in a significant way, and to some extent is still using “the methodologies of yesterday, and addressing the problems of yesterday”.

### 9.7.2 Challenges of KM

There was no specific question addressing the challenges facing the KM community or discipline. However, several responses did refer to some of the weaknesses identified also in the literature survey, and therefore contribute to the second part of research question 1 (**Why do the QM and KM professional communities need to improve?**)

- KM is a fad, which will disappear soon. This opinion agrees with concerns raised by Murray, 1996; Earl, 1999 and many others).
- KM is perceived as a centralised control over resource that needs to be free (CKO= Knowledge Tsar). De Long and Seemann (2000) for example, refer to this false perception of KM.
- KM is not a value-adding activity. This critique goes in line with concerns expressed by, for example.
- KM needs to be done by everybody – this must not be a distinct organisational function. A similar idea is discussed in Ringle (2001) for example.
- What is KM? – Several participants expressed the lack of clarity about its role. This confusion may come from inconsistent and conflicting definitions of the term KM, as discussed in Ruggles (1998) and Brompton (2000b). Even the distinction between data, information and knowledge was unclear during the focus groups (and see ref, for example).



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### 9.7.3 The Interactions between QM and KM

This section contributes to the second research question, **What are the potential interactions between QM and KM professional communities?**

In order to assess the attitudes of the QM community toward KM the author used several questions:

- What are the roles of QM (voting on a papered list of 14 roles)?
- What are the critical roles of QM? (Open question)
- What can strengthen the impact of QM?

Most QM community members do not see a threat to its sustainability or existence. Some think that it needs to adapt itself to new roles in order to sustain. Few believe that it will disappear, as quality will become an inherent part of daily business processes.

The idea of the strong linkage between QM and KM **does not come naturally** to the professional from both communities. At the beginning of each focus group, only a few, 28% of the participants, thought that KM is one of the critical roles of QM. Only after the participants discussed the issue from different perspectives, did it become much more attractive to them. KM was perceived at the end of each focus group as the most important role of the QM community, with 48% professionals rating it as a "Critical" role. However, several voices talked explicitly against the case of QM being involved in KM, based on arguments such as *"there is nothing common to QM and KM"*, *"QM must focus on its own tasks"* and *"KM is a fad"*.

The categorisation of the responses into patterns, using the typology of professional communities interactions presented in Chapter five, led to the following interesting conclusions: the author found that responses could be mapped into most of the 12 patterns. However, most of the responses that are mapped to the different collaboration patterns referred to a "should be" situation.

### 9.7.4 The use of a Computer Aided Focus Group as a research tool

As part of the validation plan, the author applied the Electronic Meetings tool, which is usually used in a business context, as the methodological and technological platform for a series of Computer Aided Focus Groups. It was used to collect a large amount of data from a number of professionals, based on rich conversations. This is a new application of an existing sophisticated business tool to the academic research world. Although the way the author implemented it was constrained and suffered from several limitations e.g. the need to combine the research the quality conference needs at the same time. The author feels that this did not reduce the reliability of the collected data, and that the richness of the data counterbalanced these limitations.

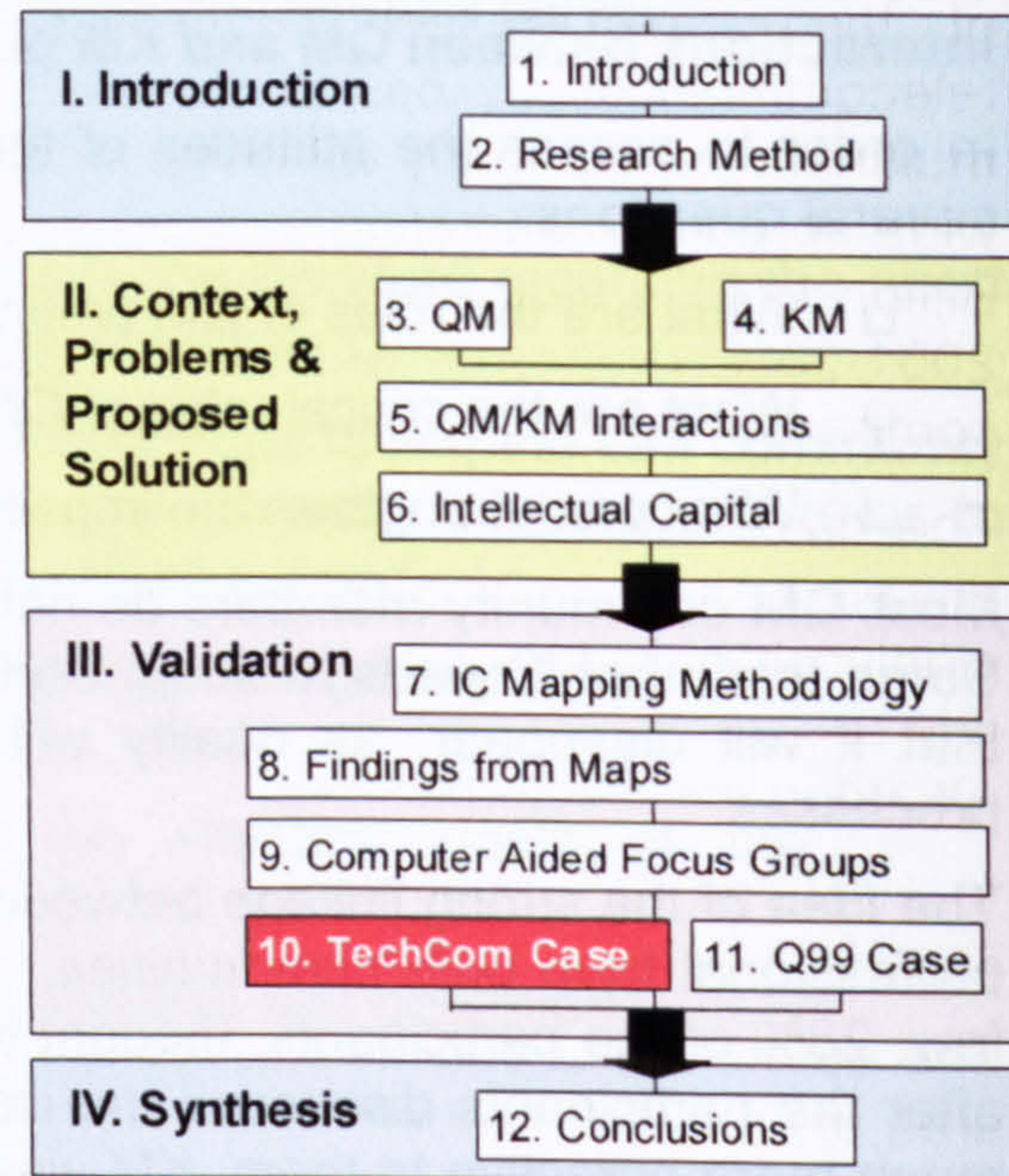


# 10 Case study I: QM and KM at TechCom

## 10.1 Aims

The case of the QM and KM programs in TechCom is the second validation avenue taken by the author. This chapter answers the following questions:

- Why was this case selected?
- What are its benefits and limitations? How are they addressed?
- How did the QM and KM programs evolve? What challenges did the QM and KM community's face?
- What interactions between QM and KM have been practiced? With what results?
- How can the case be described using the research terminology of IC flows?
- How do the findings from this case address the research questions?



*TechCom – some core activities (Management, Marketing, R&D, Manufacturing, After Sales Support)*



## 10.2 Case overview

TechCom was established in the 70's, as a small start-up, focused on electronic systems for the local defence sector. In a continuous growth process it became one of the largest hi-tech companies in the country, shifting its focus to civil telecommunication, basing its sales on 95% export. In the 90's it became a multinational company with development centres in Israel, USA and the UK, with a wide spread of marketing and sales offices. At its peak, in 2000, its turnover was 1.2 Billion USD a year, with 5400 employees. The downturn of the telecom market in 2001-2002 led to the reduction of its size to an 800 Million USD/ 3400 employee company.

The case covers the period of 1991-2001. Since it was established TechCom has always had a quality control group. In the early 90's the company increased its efforts significantly in the area of quality management, and established a comprehensive QM program, with continuous growth of its scope. In 1998 it won the National Quality Award in the electronics sector.

In 1997 the KM initiative evolved and in the following years it was established as a semi-formal and limited-size program.

The author was appointed as the CKO, but still had functional responsibilities in the area of QM, thus he belonged to both QM and KM communities. This case describes the interactions between the two communities.

## 10.3 The benefits and weaknesses of the case

### Benefits

The case was selected because it offered several benefits to the research work:

- The author, who was involved with both QM and KM communities and programs, has detailed information about them. These include rich documentation but also inside information and perhaps insights about the behind-the-scene situation. Furthermore, for interview purposes, the author has access to key people in TechCom.
- TechCom has actively experimented in several possibilities of QM/KM interactions, which enables the author to directly investigate the issues highlighted by the experiments, which are also, by all intents and purposes, inherent issues for other organisations.
- The case provides a relatively longitudinal perspective, describing the evolvement of the two communities.

### Weaknesses

However, the most important benefit of this case is also its major weakness: there is a **risk of subjectivity**, since the researcher takes the position of "actor as researcher". As a practitioner the author had tried actively, to understand and achieve the very issue researched in this thesis and that is the interaction of the QM and KM communities with the aim of enhancing their business impact.

The second weakness is drawing **general conclusions from a single case**.

### How the weaknesses are treated?

The two weaknesses are offset by the triangulation strategy of the research: the findings from the TechCom case are triangulated by findings from the literature, the QM99 case and the IC Mapping interviews.



Furthermore, three of the interviews of the IC Mapping validation tool are TechCom employees. This enabled the author to base the conclusions about the company not only on his own interpretations but also on interpretations of other employees.

Although the author had personal knowledge and insight about the case, when possible, he complemented these subjective sources by more objective ones. In this category a comprehensive analysis of the QM situation prepared by the University of Minnesota, and the assessment done by the national quality award team is included.

## 10.4 QM in TechCom

### 10.4.1 Introduction

The author was involved with the QM community of TechCom from 1993, when he joined the company in the position of a TQM engineer. In 1998 he was nominated as the quality infrastructure manager. In 1997 he initiated the KM program and became TechCom's CKO, dividing his time between classical QM work and KM. Thus, the report on TechCom QM community is based on the author's first-hand experience with many of the QM activities. In 1998 the company applied for the Israeli Quality Award (and won it). The author co-ordinated the company's preparations, and wrote the application report, which was a comprehensive report on all the company's QM activities. This enabled him to gain rich knowledge of the company QM activities.

### 10.4.2 The history and scope of the QM program.

The history of the TechCom QM program starts when the company was established, in the 70's. In the early years the quality focus was limited to quality control in the manufacturing area. In the early 90's, following the international and national trends in the area of quality, QM started to emerge as a much wider area. The following figure demonstrates the fast expansion of the QM scope during 1991-2000.

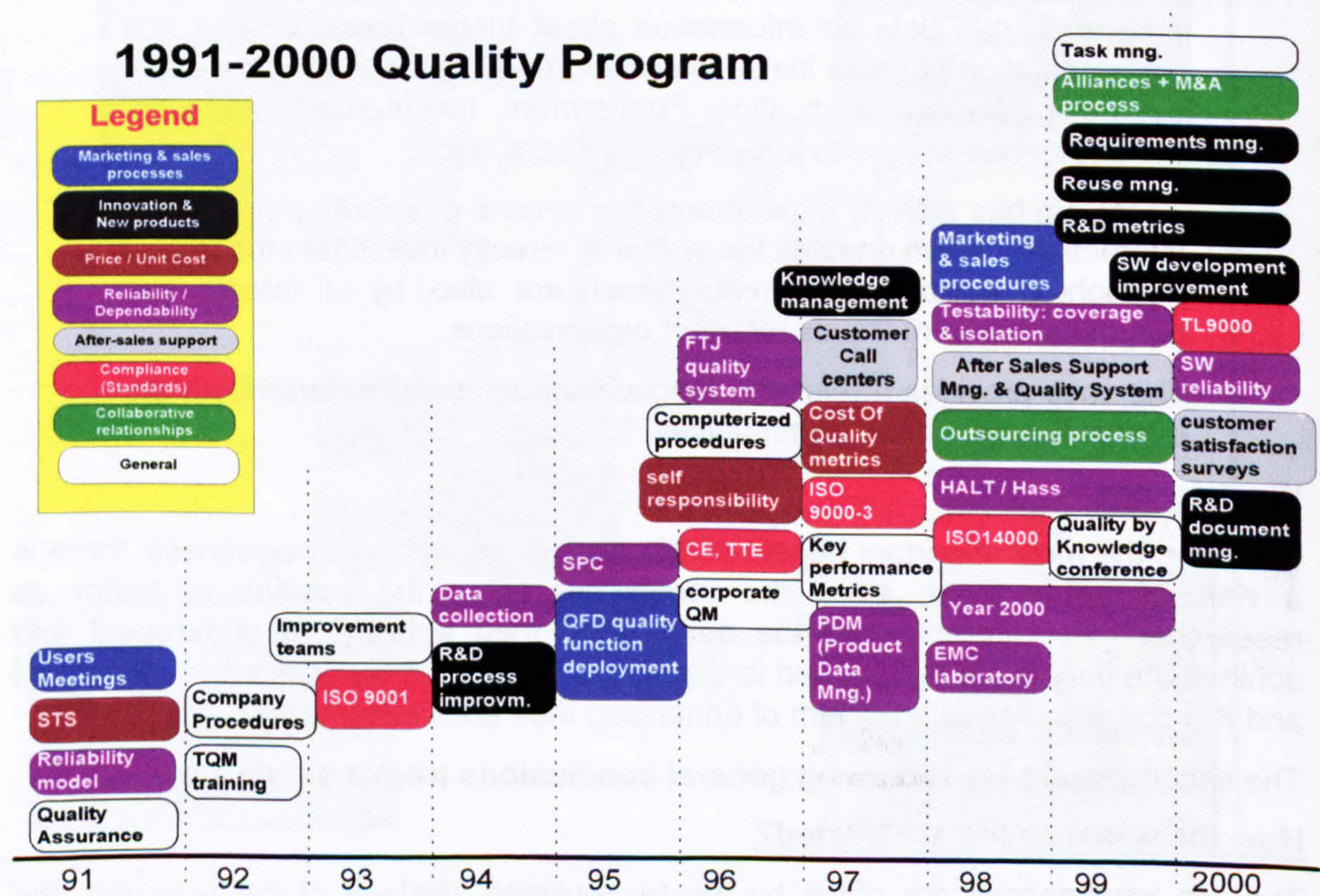


Figure 10-1: The history of the QM program



**Comment:** the position of each activity on the timeline represents when it was launched and not its complete lifecycle period.

The activities are categorised into eight groups, coded by colours (see legend). The first four groups represent the main business processes, and the others are more general:

1. Support to Marketing and Sales processes
2. Support to New Product Development
3. Product reliability (mostly support to manufacturing)
4. Support to Service ("After Sales Support") processes
5. Product cost reduction
6. Compliance with international standards
7. Support to collaboration processes
8. Other activities, including support to management processes

The following table describes each activity briefly:

Year	Activity
1991	<p><b>STS:</b> introducing the concept and process of "Ship to Stock" of purchased items (i.e. without inspection)</p> <p><b>Reliability model:</b> creation of mathematical model of product reliability based on component reliability.</p> <p><b>Users meeting:</b> organisation of annual meetings of TechCom product users.</p>
1992	<p><b>Company procedures:</b> creation of the initial set of the company procedures.</p> <p><b>TQM training:</b> Introduction of the TQM concept and tools to all levels.</p>
1993	<p><b>Improvement teams:</b> initiating of 30 improvement teams in all areas based on the TQM concept.</p> <p><b>ISO 9001:</b> TechCom was the first Israeli Company to win the ISO 9001 certification.</p>
1994	<p><b>Data collection:</b> A system to collect, analyse and report components and product failure information from the production lines and customers.</p> <p><b>R&amp;D process improvement:</b> an effort to redefine and systemise the R&amp;D process, in order to reduce time to market and improve product reliability.</p>
1995	<p><b>SPC:</b> Introduction of Statistical Process Control process and system to the manufacturing lines.</p> <p><b>QFD:</b> Quality Function Deployment workshops in several NPD projects.</p>
1996	<p><b>FTJ:</b> Introduction of an automatic system to collect product testing results from the integration lines.</p> <p><b>Computerised procedures:</b> publishing the company procedures over the intra-net.</p> <p><b>Self Responsibility:</b> Introducing the concept of manufacturing-teams self-responsibly at the manufacturing lines, and drastically reducing the product inspection processes</p> <p><b>Corporate QM:</b> Establishment of the corporate QM department, and centralising several QM related functions in this department.</p> <p><b>CE:</b> Applying for and receiving the CE product certification to most TechCom products.</p>
1997	<p><b>Knowledge Management:</b> establishing the KM program (which is a joint effort of QM with other groups, like IT and Technologies)</p> <p><b>Customer Call Centres:</b> establishing the customer call centres in order to improve after-sales support.</p> <p><b>Cost of Quality:</b> introducing an economic dimension to quality, analysing "Cost of Poor Quality"</p> <p><b>ISO 9000-3:</b> TechCom is one of the first Israeli companies to win this certification.</p> <p><b>Key Performance Metrics:</b> creating a corporate performance measurement system, based on an approach similar to the balance score cards (BSC) concept.</p> <p><b>PDM:</b> representing the quality issues in the Product Data Management system.</p>



1998	<p><b>Marketing &amp; Sales procedures:</b> adding these areas to the procedures system.</p> <p><b>Testability:</b> analysing how to improve the testability of new products.</p> <p><b>Outsourcing process:</b> defining the process of outsourcing manufacturing activities.</p> <p><b>HALT:</b> establishing a laboratory for Highly Accelerated Lifecycle Testing for selected products.</p> <p><b>ISO 14000:</b> preparing for and receiving this environmental compliance standard.</p> <p><b>Year 2000:</b> co-ordinating the company's preparation toward the Year 2000 (eliminating Y2000 SW bug).</p> <p><b>EMC:</b> establishing a laboratory of Electro Magnetic Compliance.</p> <p><b>Quality Award:</b> preparation for and winning of the Israeli Quality Award in the electronics sector (the award is the equivalent of the American Baldrige Award).</p>
1999	<p><b>Quality by Knowledge Conference:</b> leading the annual conference of the Israeli QM community, and focusing it in the application of KM to QM.</p> <p><b>Task Management:</b> establishing a system to track action items of all kinds.</p> <p><b>Alliances and M&amp;A process:</b> defining a process for more effective strategic alliances and Mergers &amp; Acquisitions.</p> <p><b>Requirements management:</b> creating a system to define and track requirements in SW projects.</p> <p><b>Reuse program:</b> participating in several efforts to increase knowledge reuse in NPD.</p> <p><b>R&amp;D metrics:</b> expanding the Company Performance Metrics system to the R&amp;D areas.</p>
2000	<p><b>TL 9000:</b> applying for the TL 9000 standard (the application of ISO 9000 to Telecom organisations)</p> <p><b>Document management:</b> creation of a system for the systematic storing, maintenance and retrieval of R&amp;D documents.</p> <p><b>SW reliability:</b> applying systematic processes to enhance SW reliability.</p> <p><b>Customer Satisfaction Surveys:</b> initiating professional surveys of customer satisfaction.</p>

*Table 10-1: Description of TechCom's QM activities*

### **QM after 2000**

How was the QM community impacted by the crisis the company faced in 2000?

The community shrunk. About 25% of the community members left the company. Functions and activities that were considered as "nice to have" were eliminated. However, most of the community members and activities remained – either because they were critical to the on-going operation of the company (e.g. manufacturing hi-quality products) or were required by external forces such as the ISO certification body. The corporate QM function became a profit-centre, which implied that instead of giving its services to the SBUs (based on corporate funding) it needed to convince the SBUs to buy its services. This meant that only activities that were considered as must or value adding by the SBUs could remain.

### **10.4.3 The QM community**

It could be claimed that all managers at TechCom, or even all employees, are members of the QM community, since they are all responsible for the quality of the product and/or service and/or process, and need to manage this quality, and even more so when an approach of self-responsibility is being implanted in several business processes, such as manufacturing.

However, like the case of the KM community, a narrower definition is used. The QM community is composed of several organisational units, which are explicitly responsible for various QM activities as their core task. Some are corporate support functions, while others belong to the SBUs or the manufacturing division. The backbone of this community is the QM corporate department, and its head, the QM vice president. Overall, the community included about 150 employees at its peak (2000). The average age of the QM community is higher than the average age of people in line units such as R&D, Marketing or support functions such as HR and IT.



Not only were the existing QM people ageing, but also many of its new employees (hired during its growing period in 1997-1999) were older than the average age of TechCom employees.

The following chart presents the composition of the QM community.

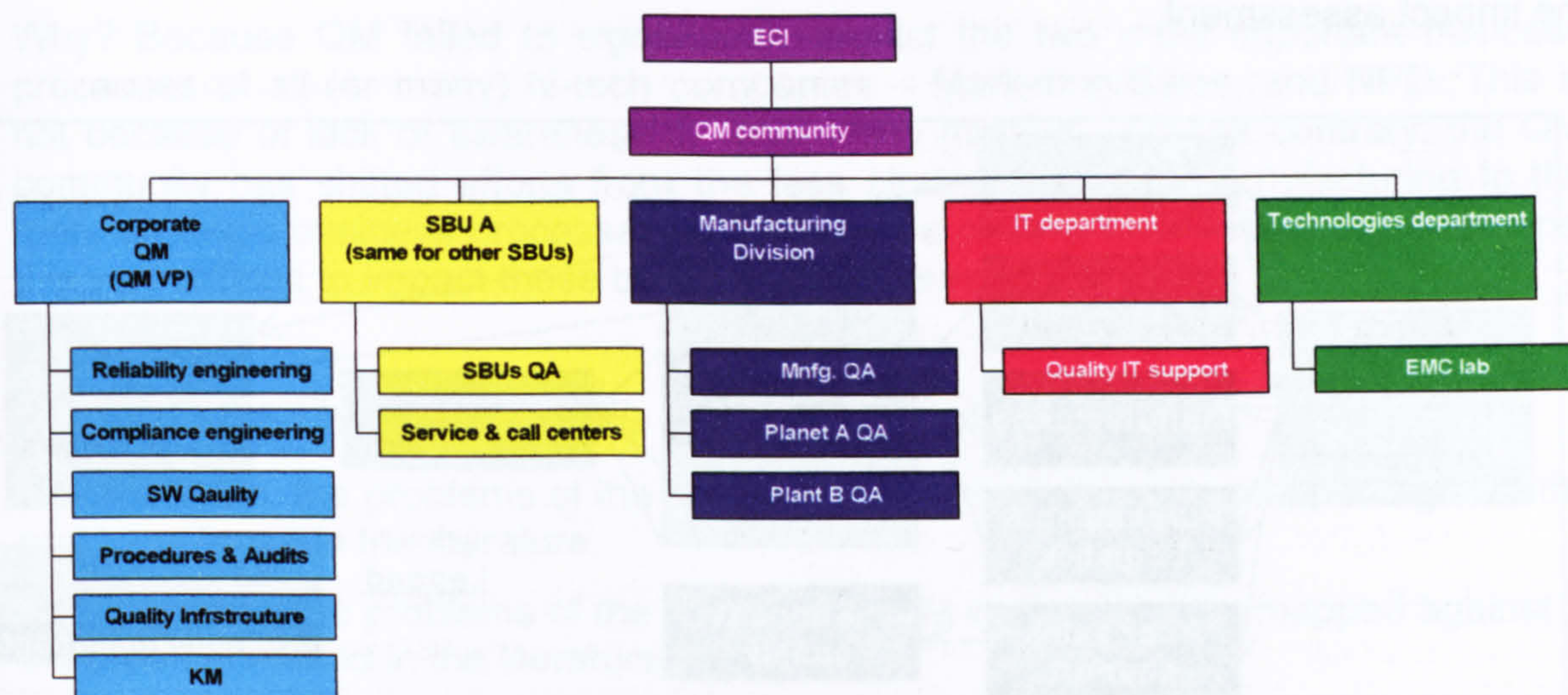


Figure 10-2: The QM community

As can be seen above, the responsibilities for QM were distributed between many organisational units. However, the sense of community was achieved by having monthly co-ordination and knowledge sharing meetings of the QM community, running many joint projects, providing support for each other and having similar objectives and even a professional language.

#### 10.4.4 The impact of the QM community

The QM history timeline tells a story of a very ambitious community – it tried to support, and therefore impact, almost all of the critical business processes; marketing, development, manufacturing, service and general management. It tried to contribute to; time-to-market reduction, innovation, product reliability and cost reduction.

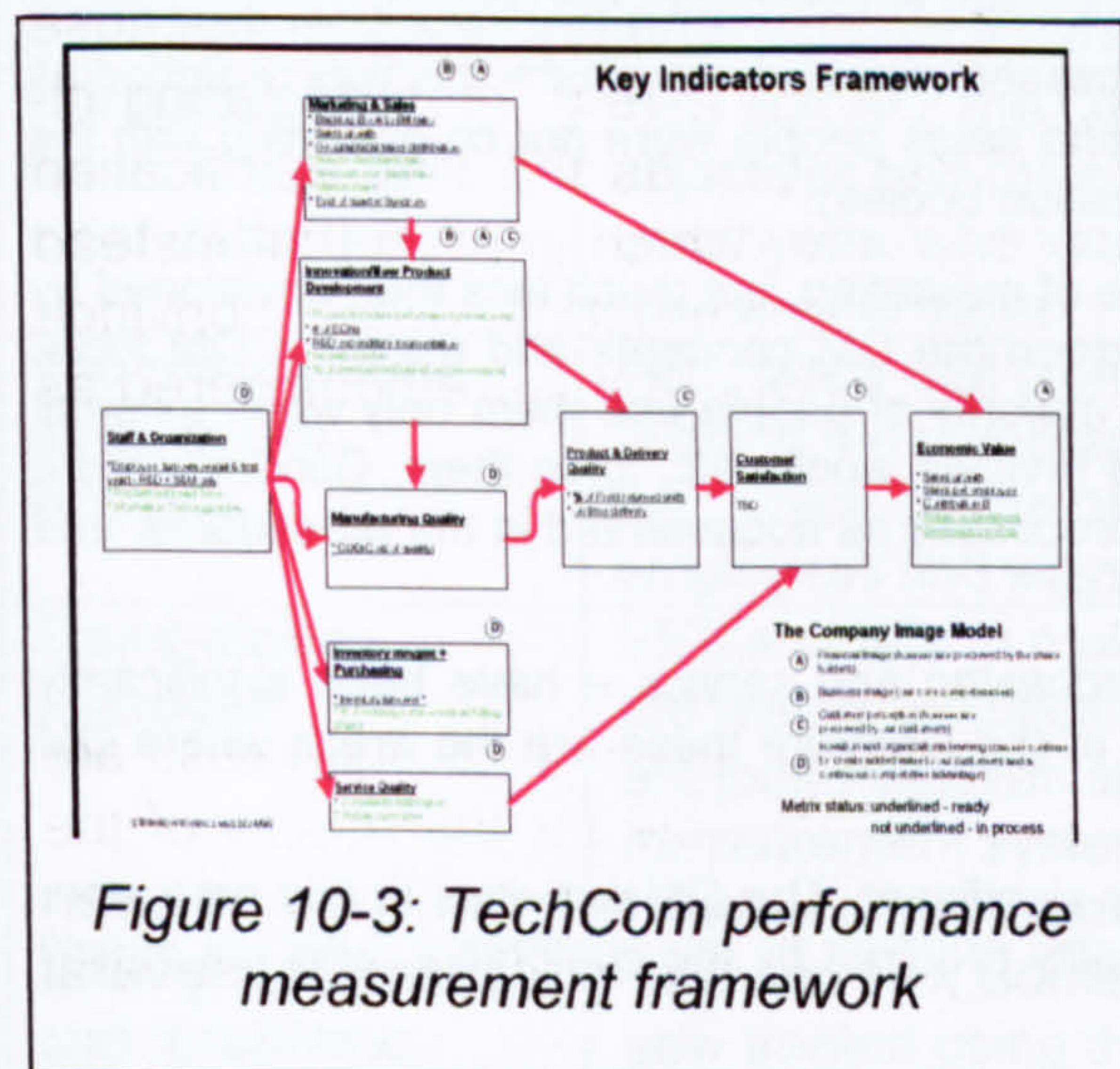


Figure 10-3: TechCom performance measurement framework

As seen in the figure above, the QM department was active in all areas of the value chain, and tried to impact their performance, in order to impact customer satisfaction and eventually contribute significantly to the bottom line (economic value) of the company.



### 10.4.5 What was the actual impact?

The following view of the impact of QM is initially based on what the author experienced in seven years of working in TechCom. The following figure represents the impact assessment.

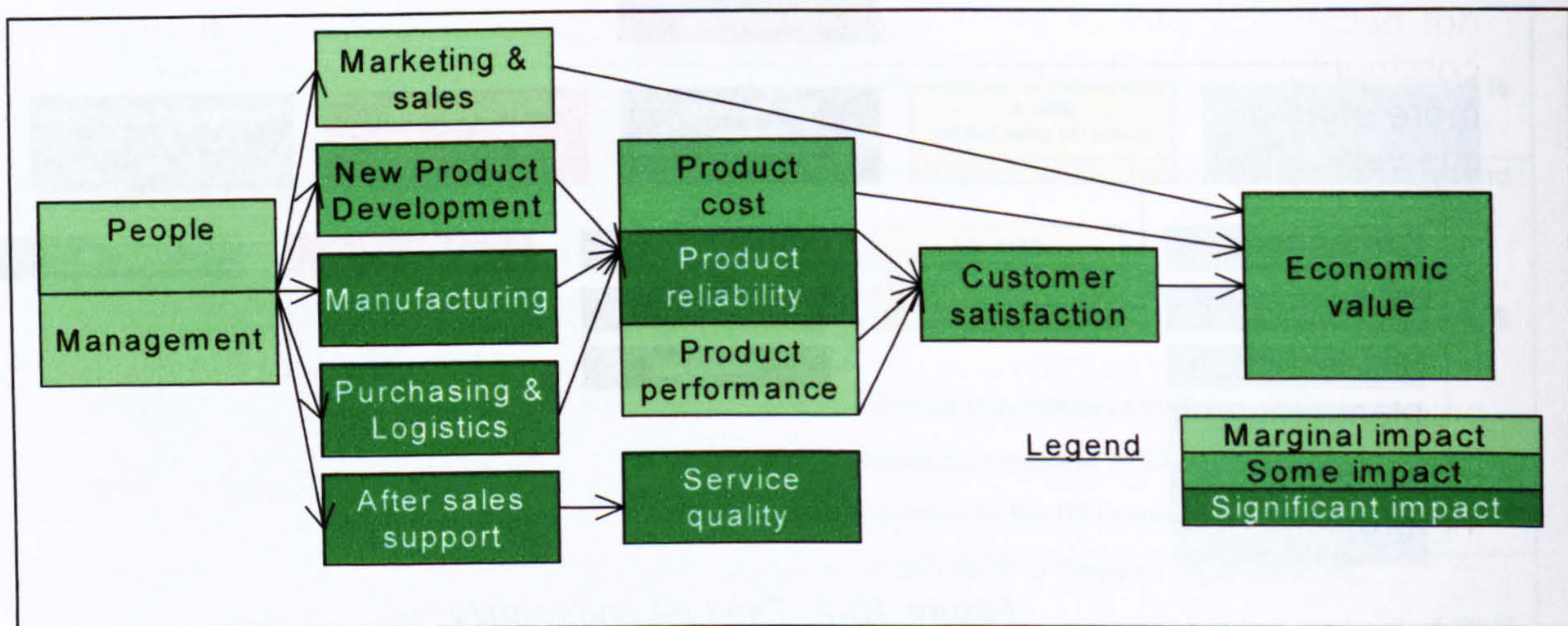


Figure 10-4: Where does QM impact?

#### Explanation:

**The impact on the “people” side** is not high – after the relatively low success of the TQM activities in the early 90’s, there has been almost no explicit effort of QM to impact employee satisfaction, skills, motivation and values. However, it is thought that some values have been absorbed.

**The impact on the management practices** was marginal – in order to win ISO 9001 the management needed to demonstrate its commitment to quality values, but most managers have still not internalised the QM concepts and tools such as QFD, performance metrics, process improvement etc.

**The impact on the marketing and sales business processes** was also marginal – this was regarded as the last wild territory to be conquered. The marketing and sales people were not co-operating with the QM people (unless forced by external forces e.g. certification bodies).

**The impact on R&D** is more significant than in the case of marketing, but much less than envisioned by the QM community. The R&D people that truly understood the QM concepts and used the QM tools, because of the perceived value, is still a minority. The majority of people use them only when external forces like certification bodies or customers who require reviews, audits etc, force them. Generally there are significant gaps between the quality-oriented R&D processes as documented in the procedures, and the actual processes.

**The other business processes** – manufacturing, purchasing and service – have been significantly impacted by QM. This is not surprising – as indicated in the literature these are the areas where QM was always been more influential.

**The impact on product and service quality** was very significant. The QM activities in this area were critical to achieving the level of product and service quality required by the customers, who are mostly large Telecom providers like BT and France Telecom.

**The impact on product performance** was marginal – efforts to influence through QFD, or Requirements Engineering, for example, took place in a few projects and did not make a big difference to the product design.

**The impact on product cost** (unit cost) was more significant – mostly by increasing reliability of components and manufacturing processes and reducing cost of poor quality. However, most contribution to cost reduction came from other disciplines e.g. Purchasing, Product Engineering and Manufacturing Technologies.

**The impact on customer satisfaction** was quite significant, since product and service reliability are important components for the customer.



The author concludes this analysis by estimating that there was some impact on the bottom line (profitability, share price and other indicators of the economic value) but it was much less than expected by the QM community.

Why? Because QM failed to significantly impact the two most important business processes of all (or many) hi-tech companies – Marketing/Sales, and NPD. This is not because of lack of awareness to what really matters. On the contrary: the QM community has shifted efforts from the less strategic area of manufacturing to the more strategic business processes. But like in the case of many other organisations, it is very difficult to impact these business processes.

### 10.4.6 The challenges of the QM community

In this section, the problems of the TechCom QM community are mapped against the problems found in the literature.

In this section, the problems of the TECHCOM QM community are mapped against the problems found in the literature.

Claims in literature	Indications
<b>The expectations are very high</b>	YES and NO: The case of TECHCOM is different. Both the top management and the employees in the line units are not expecting QM to do much beyond the traditional roles of the quality discipline (manufacturing quality, ISO certifications, taking care of customers audits). However, the expectations of the QM community from itself are very high – they desire to make an impact in other areas.
<b>...and actual results are not satisfying</b>	YES: The quality of TECHCOM products is high – and this is attributed to the extensive work n the area of manufacturing (and to less extent, engineering) operations. However, QM didn't impact other areas such as R&D and marketing.
<b>Conceptual problems</b>	
<b>Confusion: No focus &amp; lack of clear definition</b>	YES and NO: the QM people have clear understanding of their objectives and roles. However, this is not communicated well to the line employees, who usually don't understand the roles of QM and how QM tries to help them.
<b>Too mechanistic and control-oriented.</b>	YES: Many QM professionals are focusing most of their efforts on auditing the compliance of the line units with the company procedures. In the hi-tech culture of the company, this approach is failing – the line employees find ways to by pass these control mechanisms.
<b>Stand-alone approach</b>	YES and NO: in many areas, where cooperation could have enhanced the results of specific initiatives, QM operates alone. In other cases there are joint initiatives and efforts, e.g. in the case of the corporate measurement system ,which failed until QM joined force with the Finance department.
<b>Losing Relevance, and 'problems leaving the can'</b>	YES and NO: Some of the manufacturing problems disappear, or are now treated using the "self-responsibility" concept (i.e. manufacturing people are responsible for the quality of their work, which decrease the need for inspection). However, the QM community are continuously looking to increase their relevance, e.g. by handling the issue of joint ventures and strategic alliances that became an important business problem in the company in 1999.
<b>Perceived as Discouraging creativity</b>	YES: one of the reasons that many R&D managers try to avoid involvement of QM in their departments is that they belief that putting attention and procedures and standards will discourage the creativity of



	their staff.
<b>Not strategic Narrow focus</b>	YES and NO: a lot of QM focus was on manufacturing, which stop being strategic to TECHCOM in early 2000 (most of the manufacturing operations were outsourced). However, some QM people are trying to expand their activities to more strategic issues, i.e.. Quality of the Marketing processes or processes of Strategic Alliances.
<b>Implementation problems</b>	
<b>Lack of sustainability</b>	YES and NO: Some QM initiatives didn't sustain, usually as a results of poor buy-in by the intended users. Many other projects sustain for longer periods and are fully implemented.
<b>Piecemeal implementation</b>	YES: Several initiatives suffered from this phenomenon, e.g. the corporate performance measurement system that did not take an holistic system view (for example, the Rewarding issues have been ignored).
<b>Lack of Leadership</b>	YES: the CEO, as well as most of the other senior managers, was not committed to QM. This was considered as a major root cause for the community's low impact.
<b>Poor Marketing</b>	YES: as already highlighted in previous sections, one of the main problems of the community is lack of buy-in into many of its ideas. The author thinks that this has to do with the poor internal marketing efforts of the community.
<b>Lack of time and resources Fire fighting.</b>	YES: this was one of the major blockers of QM initiatives. TECHCOM employees, especially in the areas of R&D and Marketing, are usually extremely overloaded. This can fail efforts to implement long-term improvement initiatives.
<b>Resistance at all levels</b>	YES: the majority of TECHCOM employees at all levels – senior managers, middle managers or engineers – resist QM activities, as a results of the reasons mentioned earlier in this tables (lack of time, control, perception of QM as blocking creativity etc.).
<b>Controversial financial justification</b>	In the "good years" (i.e. until 2000) it was relatively easy to recruit resources for QM initiatives, and budgets did not act as bottlenecks. This changed in 2000/2001, when the economic situation of the company became difficult. The QM people are now requested to justify their positions.
<b>Positioning problems</b>	
<b>QM is a Stuff Function QM is a corporate initiative</b>	There is an inherent tension between the line functions (e.g. manufacturing, R&D, Marketing) and stuff functions such as QM. The people who "generate the revenues" regard these as overheads. QM is not perceived as value creator. The tension between the SBUs (struggling for their independence) and the company corporate adds to the problem.
<b>Aging</b>	QM people, compared to the members of other units in ECI, are older. Moreover, many were recruited to TECHCOM as already experienced employees, in their 40's and 50's.

*Table 10-2: challenges of QM*

From this long list, it can be concluded that TechCom QM is suffering from many of the problems identified in the literature. In this respect, it is a typical QM community. However, many problems have been classified under the "YES and NO" category. This means that only certain parts of the community suffer from these problems.



## 10.5 KM in TechCom

### 10.5.1 The history of the KM program

The KM initiative emerged in 1996, when the author “discovered” the area of KM in a national KM conference (“KM in Action”). After a year of study and small-scale efforts, a formal program was introduced.

The history of the KM initiative as an explicit organisational program finished in 2001, in parallel to the crisis in the telecom industry and in TechCom.

This short history is described in the following lifecycle chart. The vertical axis represents the scope of the initiative, as estimated by the number of people directly involved in it.

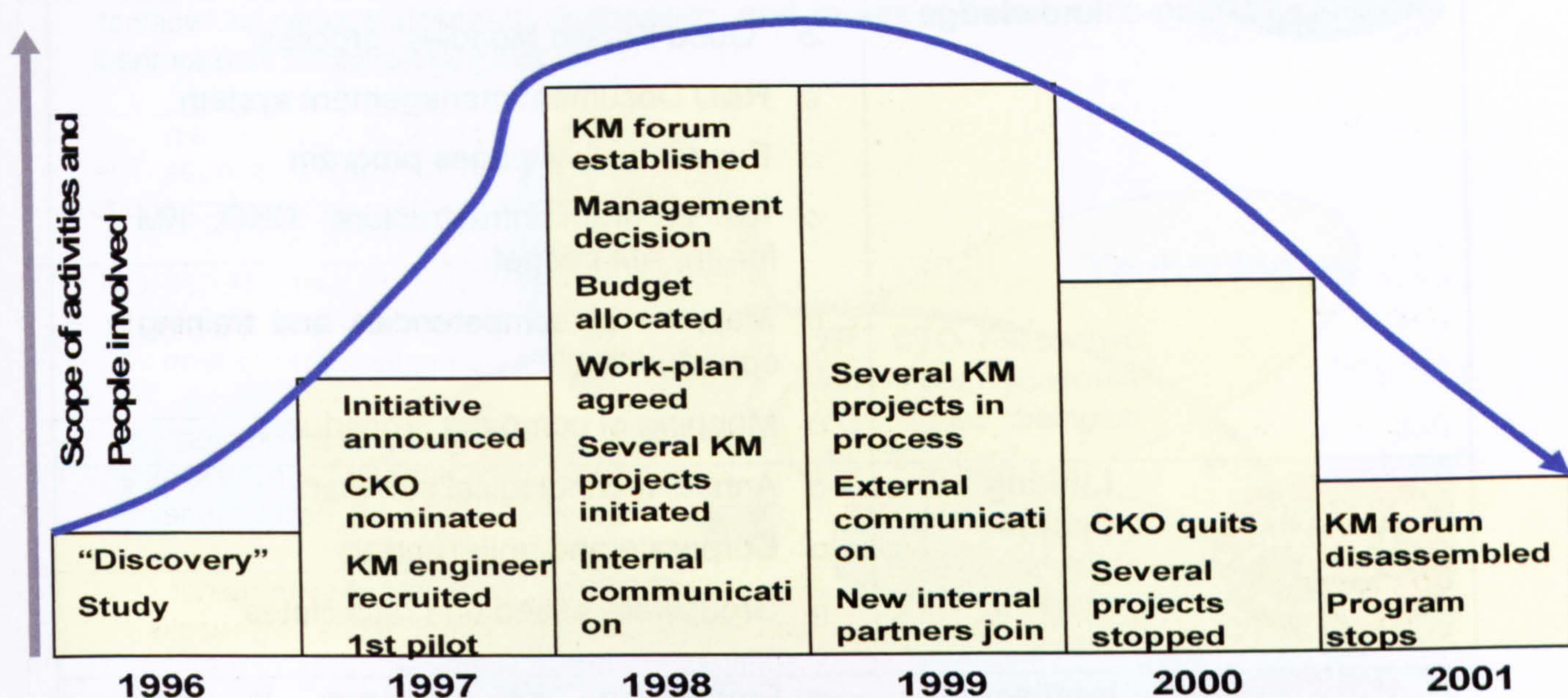


Figure 10-5: The history of the KM program

### 10.5.2 The scope of the KM program

As one of his first steps, the CKO adopted the model of the KM framework of Hughes Space & Communication as the initial framework of KM in TechCom. This was done in order to facilitate the internal (and later, external) communication of the meaning, scope and implications of KM to the company. The framework was illustrated as a “knowledge freeway”, as presented in the following figure, which was used throughout the program:

The actual activities conducted under the framework of the KM program are categorised according to this framework. It should be noted, that the first decision of the KM forum was to focus all efforts in only two areas: support to marketing, and support to New Product Development.

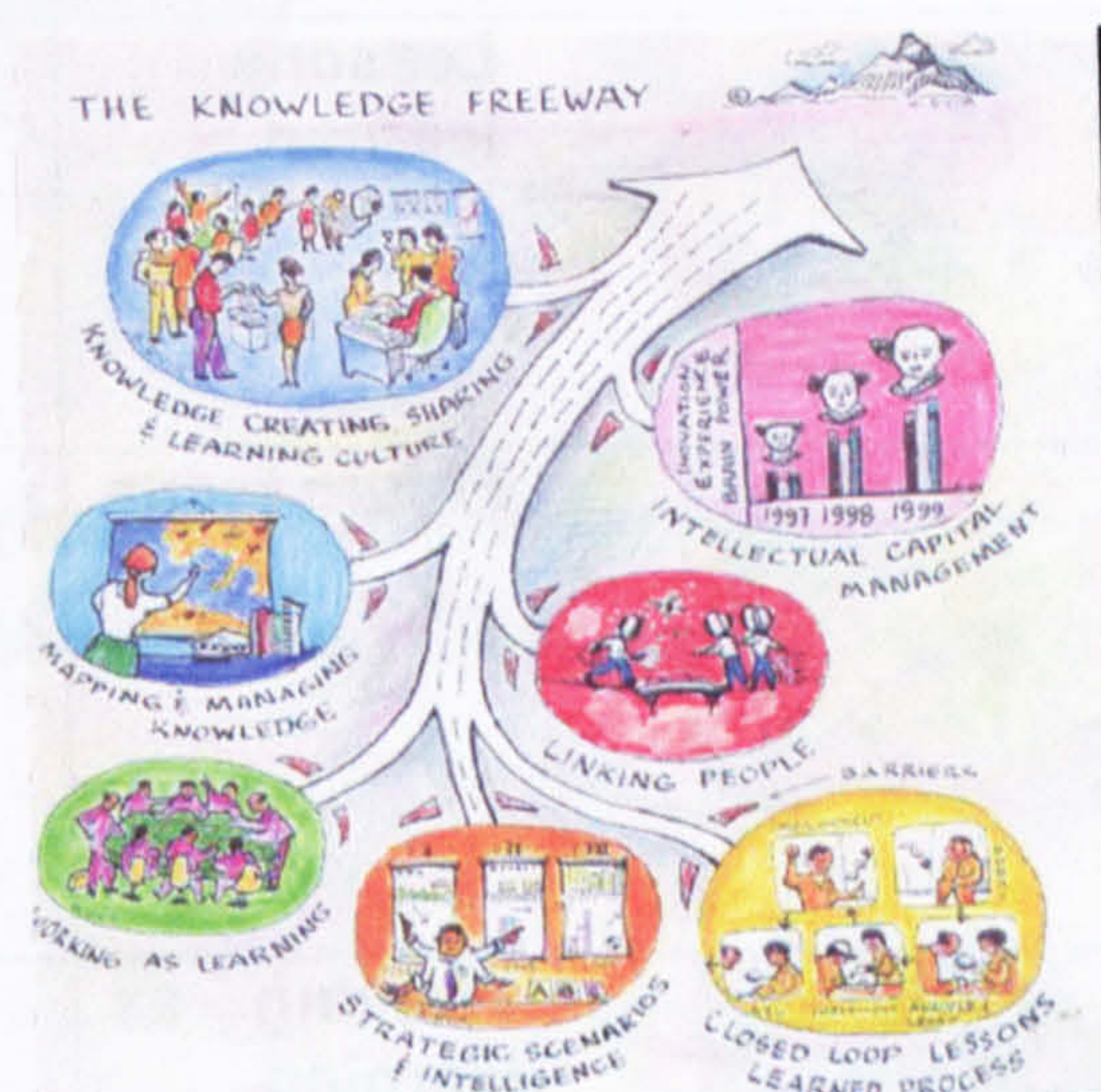


Figure 10-6: The “Knowledge Freeway”










Area	Activities
 <b>Knowledge creating and sharing culture</b>	<ul style="list-style-type: none"> <li>○ Internal communication of KM values and program.</li> <li>○ “Culture by Example” – especially by the CTO.</li> </ul>
 <b>Managing and mapping knowledge</b>	<ul style="list-style-type: none"> <li>○ Reuse in R&amp;D program (including research funded by the European commission).</li> <li>○ “Good Known Modules” process</li> <li>○ R&amp;D Document management system</li> <li>○ Experts yellow pages program</li> <li>○ KM program infrastructure: CKO, KM forum, KM budget.</li> <li>○ Mapping of competencies and training opportunities.</li> <li>○ Mapping of company procedures.</li> </ul>
 <b>Linking people</b>	<ul style="list-style-type: none"> <li>○ Annual technological seminar</li> <li>○ Corporate and units’ portals</li> <li>○ Groupware based on Lotus Notes.</li> </ul>
 <b>Intellectual capital management</b>	<ul style="list-style-type: none"> <li>○ Embedding KM metrics in the company’s Balanced Score Cards system.</li> </ul>
 <b>Lessons learned</b>	<ul style="list-style-type: none"> <li>○ The forum decided to avoid this issue at the initial phase of the KM program, due to deep cultural resistance to openly investigate past failures (or even success)</li> </ul>
 <b>Future focus</b>	<ul style="list-style-type: none"> <li>○ Competitive Intelligence (CI) forum</li> <li>○ CI organisation</li> <li>○ CI applications (First! system, contacts database, intelligence bulletins and more)</li> </ul>
 <b>Working as learning</b>	<ul style="list-style-type: none"> <li>○ QFD workshops</li> <li>○ Joint Ventures processes</li> </ul>

Table 1-4: The seven elements of the Knowledge Highway

In addition, there have been several local KM activities in various units.



### 10.5.3 The KM community

In order to identify this community, the working definition used in Chapter 4 is used:

*The KM community is a network of formal and informal communities of professionals and organisations whose core activity is strongly grounded in the different domains of KM, and identify themselves explicitly with this discipline.*

The author decided to take the “IKM forum” as the basis for identification of the KM community members. The reason is that all the forum members, by the act of joining it, had identified themselves with this discipline. The following figure shows the members of the forum, and the organisation to which they reported, which is closely correlated to their professional discipline. Although it was clear that the forum and community is about KM, it was decided to call it “Information and Knowledge Forum” in order to reduce potential scepticism, and to strengthen the co-operation with the Information Technology people.

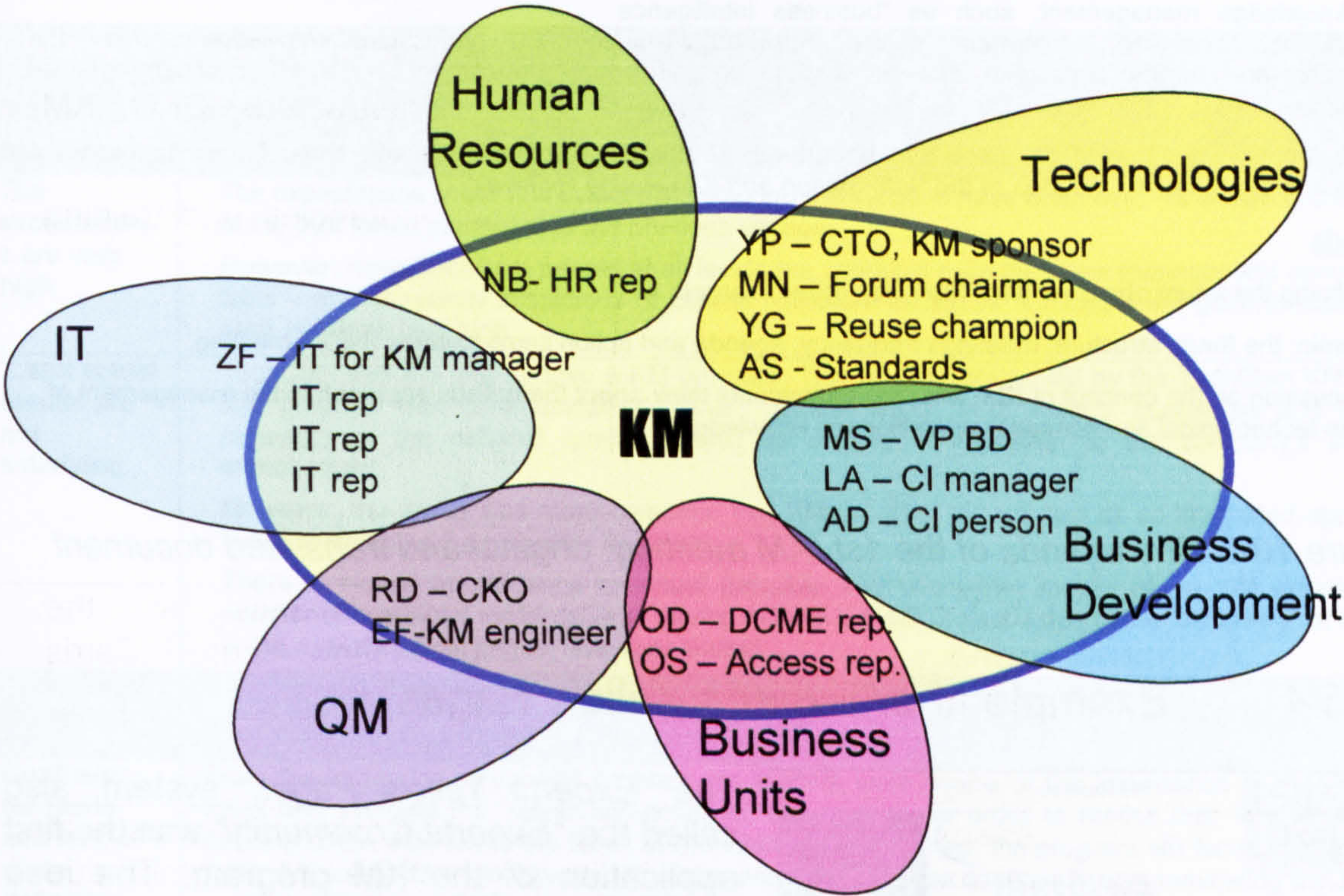


Figure 10-7: The KM community (initials of players' names)

The agenda of the first meeting of the forum, shown in the next figure, represents the original intentions and expectation.



## Information and Knowledge Forum: Meeting 1: 12.297

(09:00-11:00, room 102a)

Participants: L. Averbuch, Y. Ben-Zichry, M. Nahum, Y. Lahav, O. Goldin, Y. Zluf, R. Dvir

Several trends and evolving developments lead to the initiating of this forum:

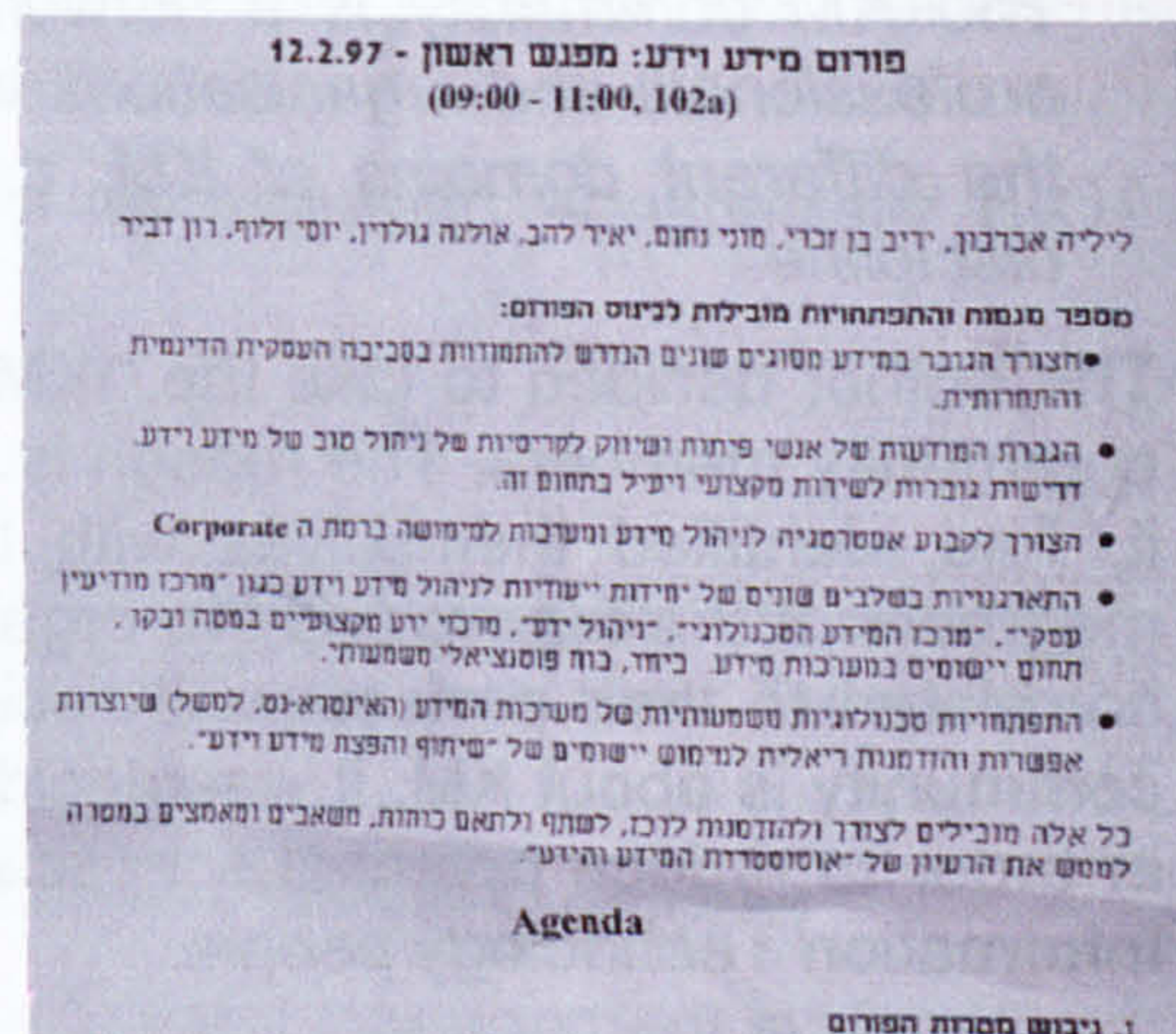
- The increasing need for information of various kinds, in order to compete in the dynamic and competitive business environment.
- The growing awareness of the R&D and Marketing people of the criticality of good management of information and knowledge. More demanding expectations for professional and effective service in this area.
- The need of the corporation to define a strategy for information management and systems to implement it.
- The emergence of dedicated units for information and knowledge management, such as "business intelligence centre", "technological information centre", "knowledge management", professional knowledge centres in the corporate and line units alike, and the "application unit" and IT department. Together, significant potential power.

These factors point toward the need and opportunity to centralise, co-ordinate and share forces, resources and efforts in order to realise the idea of the "Information and Knowledge Highway".

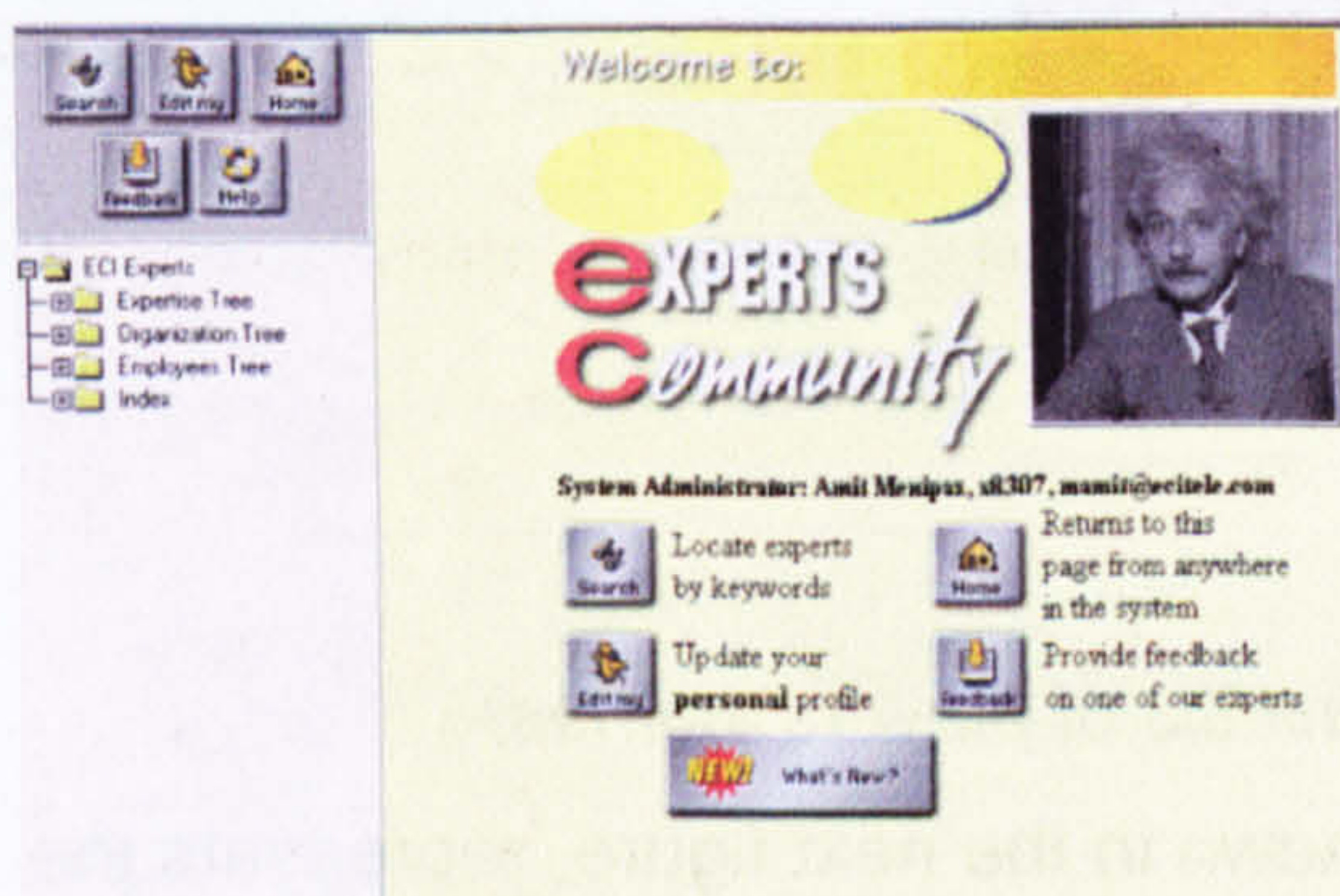
### Agenda

1. Defining the forum objective: Mandate, Objectives, Targets
2. Admin: the forum structure, meetings frequency, agenda and action items towards the 2<sup>nd</sup> meeting.
3. Discussion on the concept of KM: what the participants think about the holistic approach to the management of the technological and competitive intelligence knowledge.

Figure 10-8: The agenda of the 1st IKM meeting: original and translated document



## 10.5.4 Example: the "Experts Yellow Pages"



The "Experts Yellow Pages" system, also called the "Experts Community" was the first application of the KM program. The idea was to identify all expertise areas in the company, and then map TechCom experts against these areas. This was seen as an opportunity to increase reuse and sharing of technological knowledge across organisational borders. It was chosen as the first program because the concept was

concrete and technology oriented, easy to implement (so the KM people thought) and could serve as an anchor to many future KM initiatives e.g. "Centres of Excellence" and "Best Practices". It also assumed that it would bring "fast results", which was considered as one of the selection criteria. The system included:

- ❑ a computerised application
- ❑ a process to map and update expertise areas and experts
- ❑ a process to publish and implement the system



- ❑ Several specific issues such as rewarding, feedback loops and information security were also planned.

The system was developed in 1997, populated in 1998 with about 100 expertise areas and 250 experts, and gradually faded away in 2000. The figure above is taken from the computerised application.

### 10.5.5 The challenges of the KM community

In the following section, problems found in the literature are revisited (Chapter 4) and their applicability to the TechCom’s KM community examined. The examples are drawn from several areas of the KM program. However, most are taken from the “Experts Yellow Pages” system, which was the first KM application in the company. It surfaced many of the challenges of the TechCom KM community.

The overall picture, as provided in the following table, is clear. Although the leaders of the KM program were aware of many of the problems that could occur, and even tried actively to avoid them, the community did fall into most of the traps indicated in the literature.

Claims in literature	Company A
The expectations are very high	<p>The expectations of the few evangelists who led the initiative have been high, as shown in the agenda of the IKM forum presented in the previous section.</p> <p><b>However</b>, most TechCom people at all levels are sceptical regarding new management concepts and tools – and especially suspicious of central corporate initiatives. Therefore the general expectations have <u>not</u> been very high.</p>
...and actual results are not satisfying	<p>TechCom was the first to have a KM program. This fact, accompanied by the TechCom KM concept and program was communicated to the “external world” (e.g. visitors, customers and even the reviewers of the national quality award) as one more indication to the company’s innovative management.</p> <p><b>However</b>, the reality was more complex. The KM program did not last as an integrated approach. It faded away about 3 years after its launch.</p> <p>There is almost no evidence to actual (tangible and intangible) results of the KM initiatives. The number of anecdotal evidence (e.g. saving of time in R&amp;D project x due to the ‘discovery’ of an expert in the experts yellow pages) was very limited.</p>
Conceptual confusion	
Confusion: No focus and lack of clear definition	<p>From the beginning of the KM program, its leaders were aware of the importance of having a clear focus and avoiding the “we-should-cover-all” phenomena. In order to realise this, in one of the first meeting of the IKM forum the focus of the initiative was agreed: the program will focus only on “KM” in R&amp;D and competitive intelligence. Furthermore, the CKO was continually communicating the TechCom working definition of “KM”, using the “KM freeway” metaphor.</p> <p><b>However</b>, there was still a focus problem: it was not clear whether the program is process and people focused or IT oriented. This point is elaborated in the following paragraph.</p>
Confusion: Wrong Hands, Wrong Focus (Does KM=IT?)	<p>The KM initiative merged from the TQM discipline, and thus had in its very beginning a clear people/process focus.</p> <p><b>However</b>, very soon, when it became a formal program, it became heavily IT oriented. The budget was given to and managed by the IT department, and 85% of the resources, efforts and attention were around IT issues. The decision to call the forum “The Information and Knowledge Management forum (IKM)”, which was needed because of political reasons, also blurred the focus. The result, as the author experienced and as many literature sources suggest, was fatal: instead of focusing on building good KM processes and handling the cultural issues (and using IT tools when needed), the IT infrastructure became the focal point and almost the objective of the KM program.</p>
Confusion; What is “Knowledge”, The “Repository paradigm” and “K as thing”.	<p>When the program started, the CTO who was its sponsor declared that there is no way to capture the knowledge of the engineers, and even if it was possible, it would become outdated in months, due to the fast technological changes in TechCom market. Therefore, he proposed to start with the Experts Yellow pages approach, as a way to provide “pointers” to the technological knowledge.</p> <p><b>However</b>, the program did fall later into the “repository paradigm” trap. It took only one year to forget the CTOs warning, and to start focussing a lot of effort and building large and static repositories of information. For example, one of the major efforts in the last year of the program was to create an extensive R&amp;D document management system.</p>
Cultural	<p>The IKM forum was fully aware of the cultural barriers that might harm or even block the KM efforts. The HR department representative was invited to participate in the IKM forum in order to advise how to</p>



barriers	<p>handle such cultural issues.</p> <p><b>However</b>, all KM initiatives faced serious cultural problems, which reduced their impact. For example:</p> <ul style="list-style-type: none"> <li>• The “experts Yellow pages” system– when the system was presented to the top management, it insisted that the access to the system should be restricted only to managers, in order to minimise the risk of information leakage. It took a considerable effort to explain to the management why each engineer must have free access to this system.</li> <li>• The “Good-Known-modules” initiative – the company invested considerable resources in creating a generic mechanical platform that could be reused across the business units in different products. However, most units found reasons why not to use it and invest in a new platform. It was a classical re-inventing the wheel phenomena, hidden behind engineering arguments.</li> <li>• The “Competitive intelligence” system - the SBU, who were most advanced in this area, refused to share its system (and competitive information) with the other SBUs. That was a classical knowledge-sharing cultural issue.</li> <li>• After Action Reviews – although it was considered as a very important KM concept which can save the company from repeating costly mistakes, it was decided not to include it in the program. It was very clear that it had no chance in the cultural climate of the company that hid mistakes and failures.</li> </ul>
Insufficient communication	<p>The KM community was aware of the need to communicate the KM concept, values and program. It used several communication channels. For example, the need, concept, and tool of “Experts Yellow pages” was communicated via the following channels:</p> <ul style="list-style-type: none"> <li>• An article in the company internal newspaper</li> <li>• A booth at the annual technological seminar</li> <li>• Presentation to engineers, in their department b-weekly meeting</li> <li>• An email to all engineers</li> <li>• A publication in the intranet homepage.</li> </ul> <p><b>However</b>, it was not enough. Two years after the system was implemented, the IKM forum initiated a survey to explore how the Yellow pages system is perceived and used. One of the findings was that most engineers were not aware of the existence of the system or of its potential contribution.</p>
Too much communication – KM as a Fad & Hype	<p>The KM community was aware of the destiny of the company wide TQM initiative, which flourished and faded away a few years before the beginning of the KM program. One of the lessons-learned was that slogans and hype-style communication must be avoided. The need to balance between the importance of communication (as discussed in the previous section) and the risk of too-much communication was well recognised.</p> <p><b>However</b>, the careful handling of communication did not completely solve the “Fad &amp; Hype” problem – many of the employees, veterans of the TQM program, did perceived KM as new management hype. There is no tangible indication for this – apart from the author’s feeling that this hype and fad cynicism was “in the air” in several meetings.</p>
Implementation problems	
No measurement	<p>The literature on KM is divided between two schools: those who believe in the necessity to accompany KM efforts with measurements based on the “what can’t be measured can’t be managed”, and those who think that knowledge cannot be measured. In TechCom, measurement was done mostly in the financial and manufacturing areas. Among TechCom’s R&amp;D and marketing people, measurement was never popular. Since the KM program was focused in these areas, there was no pressure to embed measurement in it. This is why only a few and not very significant measures were used, e.g. the number of experts in the Yellow pages system, or the number of accesses to it.</p>
Difficulty to measure ROI (Return on Investment)	<p>When the program started, the financial performance of the company had been very good. Perhaps this is why the management never required a clear calculation, demonstration or even examples of the expected ROI from the KM program. Therefore, the lack of ROI measurement was not a problem.</p> <p><b>However</b>, this changed drastically in 2000, when the financial performance of the company started to deteriorate. Most programs that were considered as “nice to have” and could not show clear and short term ROI were either closed, or gradually faded away. The major people of the KM program, for example, quitted the company (e.g. the CKO), were fired (e.g. the Business Intelligence manager) or moved to an operative role (e.g. the IKM forum chairperson).</p>
Bottom Up, limited efforts programs and lack of critical mass	<p>Considering the relatively low interest of the top management of TechCom in process and infrastructure improvement initiatives, the KM program was designed as a bottom-up approach. It was assumed that limited-size small efforts, which will lead to local fast successes, would later lead to a company-wide strategic implementation. This is why relatively low-level managers took all the decisions, and that all efforts were tactical – there was no strategic plan of the KM initiative in its first years.</p> <p><b>However</b>, this approach did not provide the expected results. Three years after it started, the program had not gained critical mass and was still based on scattered efforts of very few people. Furthermore, the disadvantage of local efforts, which were not guided by a comprehensive strategy, became apparent. The author believes that this is one of the reasons for the fading-away of the KM program a</p>



	few years after it started.
<b>Lack of Time to “Manage” Knowledge</b>	<p>When the concept of KM was discussed with TechCom engineers and middle managers, they all agreed that it made sense to invest some time in it, in order to avoid the waste of much more time by “re-inventing the wheel” and not using available knowledge. This understanding was reflected also in the results of internal surveys conducted in TechCom.</p> <p><b>However</b>, when it came to reality, the picture was very different. The engineers, who usually worked in a panic mode, never found the time to <u>contribute</u> to the KM systems – e.g. fill their professional profile in the experts yellow pages system. Worse than that, they did not find the time required for <u>using</u> the knowledge systems. For example, the Yellow Pages system was hardly used.</p>
<b>Young discipline, no scientific basis &amp; lack of experience</b>	<p>TechCom was the first Israeli company to run a KM program and to appoint a CKO. The implication was that it could not learn from the experience of equivalent programs in other Israeli organisations. It is interesting to note that all the followers of TechCom in this area had the advantage of learning from TechCom’s experience and lessons-learned. This was done by many visits to TechCom, and many presentations of the TechCom KM program by the CKO in various multi-company events as well as in KM courses. In a way, TechCom served as a case study for all other companies who entered this area in the last few years.</p>
<b>Attention Management</b>	<p>One of the reasons for asking a senior vice president to serve as the program sponsor was the awareness that he would be the representative of the program at the top management, and that this move would heighten the profile of KM.</p> <p><b>However</b>, the actual results were disappointing. Even with this high-level sponsor, it was very difficult to capture the attention of the top management to the KM program. During its existence, the KM program was discussed only two or three times at the top management meetings, and was never fully presented to them. This problem was not unique to the KM program – and was common to most efforts to improve infrastructures and processes (like QM, for example).</p>
<b>The Field of Dreams syndrome</b>	<p>Most IT applications developed from this implementation problem. For example, the “<i>Experts Yellow Pages</i>”. It took considerable effort to create the system, populate it with all experts’ profile and publish it. Contrary to the expectations, the usage level (as measured by number of hits) was very low. The assumption that a very nice system will attract users was proven wrong.</p>
<b>Lack of Sustainability</b>	<p>The KM initiative was based (probably too much) on the two leaders of the KM program: the CKO (from the QM department) and the KM from chairperson (from the Technologies unit). When one of them left the company in 2000, and the other left the corporation and received an operational role in one of the SBUs the same year, the initiative died.</p>
<b>Political battles</b>	<p>The initiators of the KM program were fully aware of this risk. The IKM forum was designed very carefully in order to minimise political problems. Decisions about its name, members, sponsors, chairperson and agenda – were all based on careful consideration of the political forces.</p> <p><b>However</b>, the KM program did suffer from political power games between the various corporate functions that led this initiative. In particular, there was an on-going battle between the IT department and the other functions. For example, the CKO developed a full functional “<i>Expertise Yellow Pages</i>” system, but the IT department did not allow it to be put on the Intranet. Therefore its application was put into action only 6 months later, after the IT department developed a “professional” system.</p> <p>In addition, the conflict between the unit lines and corporate functions, which exist in the company in many areas, was also apparent in the KM community. While the corporate functions tried to support the Strategic Business Units (SBUs) in improving KM, the SBUs tended to have an independent agenda and activities. The bitterest battle was between the KM person of the Access SBU, and the corporate Business Intelligence, both members of the KM forum.</p>

Table 10-5: Problems of TechCom's KM community

10.6 QM/KM interactions

10.6.1 A rough account from a critical meeting

As was reported earlier, the initiator of the KM program belonged to the QM department when the program started. A few months after the KM program was initiated, autumn of 1997, the CKO had a meeting with his superior, the QM Vice President, to discuss the position of the KM program. As it was an important meeting to the KM program and also to the CKO’s personal position, the CKO recalls vividly parts of this very honest discussion. Since the meeting was not transcribed, the following section mirrors the content but not the exact wording. At first glance it seems to be about nothing more than organisational hierarchy issues – but a second glance reveals that it is about the essence of the QM/KM interactions.



CKO: I would like to disassociate the KM initiative from the QM department and program, and report directly to the CTO (Chief Technological Officer) and not to you.

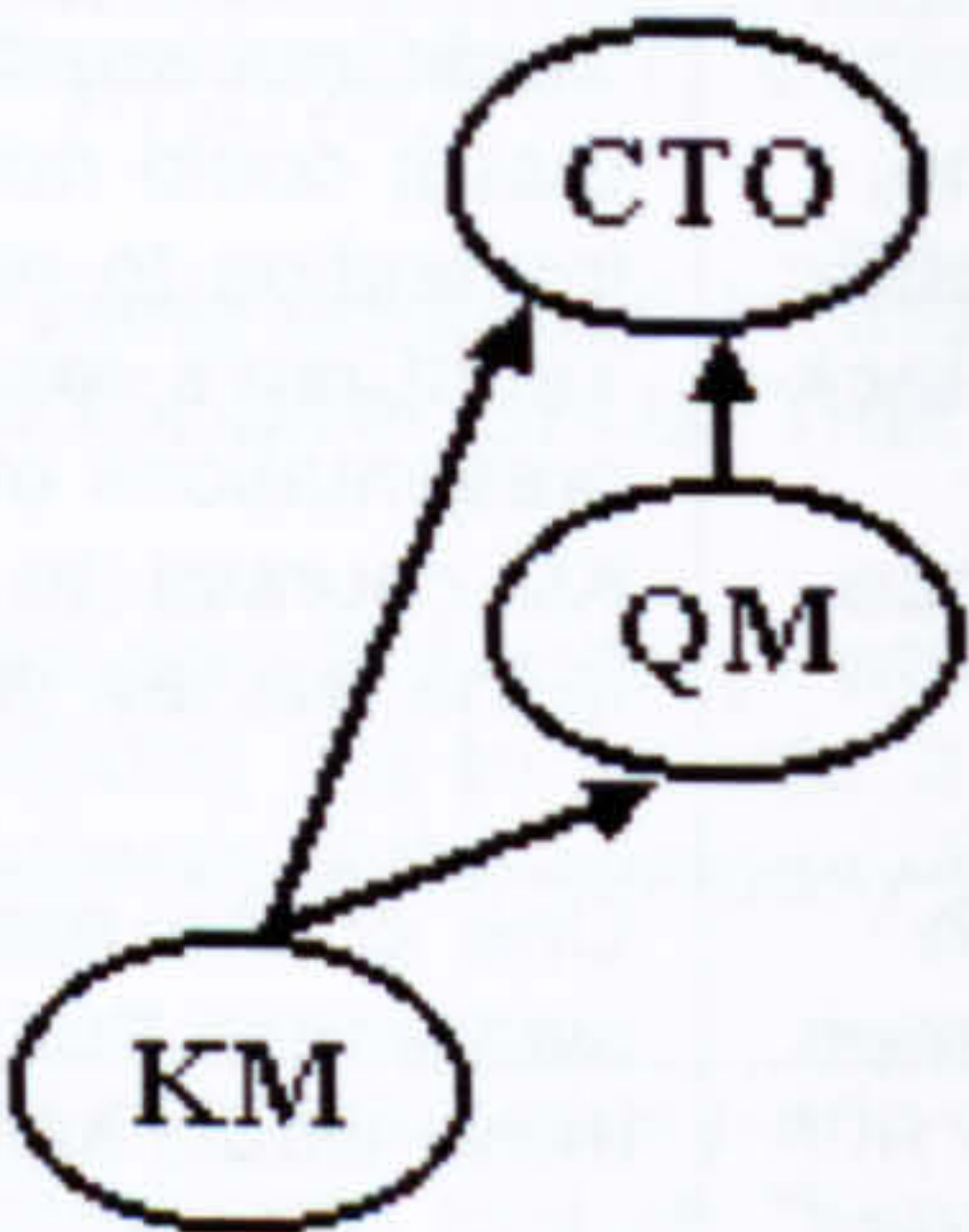
QM VP: Why?

CKO: The KM program focuses on the marketing and R&D areas, where QM is not appreciated so much. I am concerned that the engineers and marketing people will associate KM with QM, i.e. with ISO 9000, procedures and audits. This will kill any chance to do real work with them. The direct linkage to the CTO, on the other hand, will add credibility and technological flavour to the KM program.

QM VP: I understand your worries, but think that you should rethink this issue. There is an advantage for QM to lead the KM program. It will add to the innovative perception of QM, and will help QM provide more value to R&D and Marketing, which are the most important processes in the company. I also think that QM can significantly support the KM program. Don't forget – you are one full-time employee at the KM program, we are more than 100 QM professional with significant presence and lots of activities throughout the company. Moreover, I think that the link between QM and KM is natural – if you look at most QM activities – aren't they about better management of information and quality. Design Reviews, audits, improvement teams, customer complaints analysis are all about this very objective.

....

At the end of the meeting, the CKO and QM VP agreed on a compromise. The CKO would report directly to both the QM VP and the CTO (who happened to be the superior of QM). The CKO would present himself as a QM person or a Technology person according to the political context. They drafted the following reporting scheme.



The following section describes how the QM/KM co-operation was realised.

10.6.2 Interaction Patterns

Here the author revisits the QM/KM interaction patterns found in the literature and defined in Chapter 5. As clearly demonstrated in the following table, many of those patterns, sometimes even conflicting ones, are present in the TechCom case. Moreover, while writing this section, it was necessary to add two additional patterns.

Interactions patterns in literature	Interactions patterns in TechCom
No interactions:	YES - In most case, the KM community people (e.g. the BIC people) completely ignored the QM community, and did not think it could bring any value to them. The same happened in the other direction – most QM people did not show any interest in the KM activities. It was hoped that the SBUs QA people would serve as “ambassadors” of KM concepts and activities in the SBUs, but they did not buy into this role. For example, most of them refused to represent the KM NINCube project at the SBUs.
Convergence	NO.
Take over:	YES, PARTIALLY: as revealed in the discussion above, the QM corporate function insisted on having the CKO reporting directly to them.
Emergence:	YES - The KM program, and parts of the community, emerged from the QM community.
Confrontation	NO.
Overlapping	NO.
Replacement	NO.
Fading away	YES - the KM community faded away, but the QM community survived.
Co-operation I:	YES - KM adopted some concepts of QM, e.g.



Learning	<input type="checkbox"/> "Measurements" (introduced into the "Yellow Pages system" <input type="checkbox"/> "Internal Customer-Supplier relationships" (introduced into the competitive intelligence system).
Co-operation II: Support	<p>YES - the QM supported the KM community with financial resources, e.g. funding for consulting and manpower for populating the "Yellow Pages". QM provided the quality expertise required for the document management system. The QM VP supported KM concept activities in meetings with senior managers and provided political support to the CKO, when needed. QM covered some KM metrics in the corporate performance metrics system.</p> <p>KM supported QM in the computerisation of the company procedures system or creation of QM homepage.</p> <p>KM clearly supported the external relationships of QM. By presenting the KM activities as part of the QM program to customers, certification bodies and other external players, a more innovative image was created. And vice-versa – by including some QM activities in the KM framework initiative, it was possible to present KM as a significant program.</p>
Co-operation III: joint efforts	<p>YES - QM and KM led together several efforts e.g.:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The "<i>Joint Ventures and M&amp;A process improvement</i>" initiative.</li> <li><input type="checkbox"/> The "<i>business opportunities funnel</i>" initiative.</li> <li><input type="checkbox"/> The QM VP and CKO joined forces to lead together the 1999 national quality conference.</li> <li><input type="checkbox"/> In one SBU, the local QA join forces with KM to implement some tools of the NIMCube Knowledge reuse project.</li> </ul>
Co-operation IV: working together toward a common objective	<p>YES - this was true at the level of the leaders of the two communities, who had shared visions about the improvement of the critical business processes based on QM and KM concepts. However, when it came to the other members of the two communities, such shared visions were non existent.</p>

Table 10-6: QM/KM interactions patterns at TechCom

**A reality check:**

The table above shows that many co-operation patterns were realised in the TechCom case. However, two factors should be mentioned:

- ☒ Most of the co-operation patterns were not significant and were limited in scope.

A large proportion of the co-operation work was initiated by and dependent on the CKO, who was a major player in both communities and served as a bridge between them. Without this factor, it is believed that the scope of the co-operation between QM and KM would have been even more limited.

10.7 Flows of ICs between QM and KM

10.7.1 Introduction

At this point, findings about the QM/KM co-operation at TechCom will be put in the framework of Intellectual Capital. In order to do so, the author evaluated the ICs of both communities, using the IC mapping tool. A tool which he developed and which was described in Chapter 7. This was done by the author, and therefore represents his own judgement of the situation, as was the case with the previous sections of this chapter.



10.7.2 The ICs of TechCom's QM community

The map of the QM community is shown in the following figure.

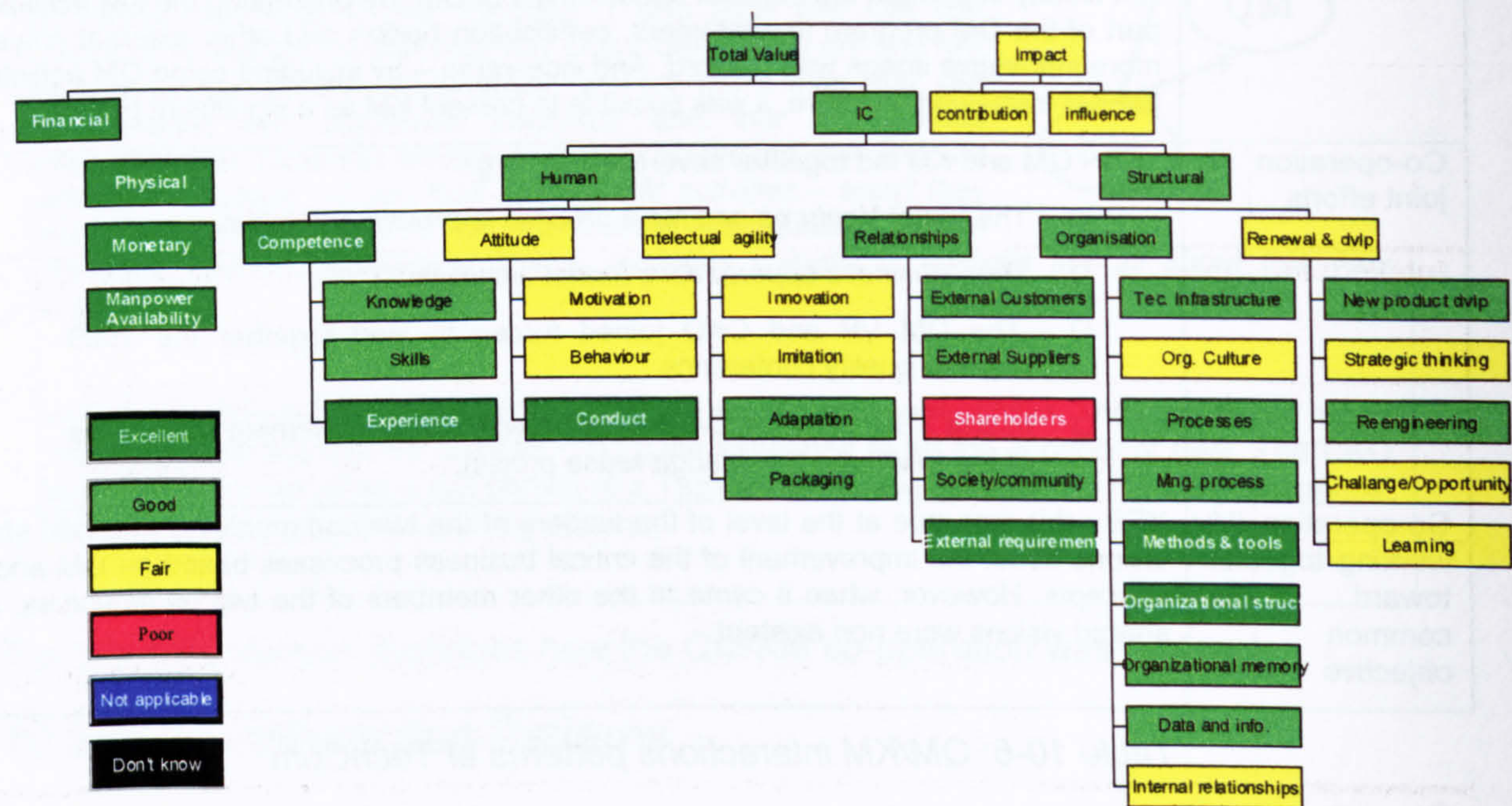


Figure 10-9: The IC of TechCom's QM community

In the following section the author explains briefly the logic behind this map. During the mapping process, a bottom-up approach was taken, but when explaining it a top-down approach is taken, i.e. firstly the overall picture is explained and then its components are looked at in more detail.

**The Overall Capital** of the community is satisfactory, as both its Intellectual Capital and Financial Capital are good. There is a large gap between the overall capital and the relatively low Impact of this community.

**The Financial Capital** of the community is strong, with a relatively large annual budget for both expenses and investments (**monetary capital**), **only** a large number of people committed full time to QM (**manpower**).

**The Intellectual Capital** is satisfactory, as both the Human Capital and the Structural Capital are satisfactory, as described in the following table.



<b>Human</b>		
<b>Competence</b>	<b>Knowledge</b>	The knowledge of community members in QM methodologies and approaches is relatively deep. However, most members have knowledge in their specific areas of expertise due to a narrow focus.
	<b>Skills</b>	Most members are well trained and skilled in using and implementing the QM tools they are responsible for.
	<b>Experience</b>	Most community members have served several years at least in their positions, hence are well experienced in their area of expertise.
<b>Attitude</b>	<b>Motivation</b>	Many of the community members are motivated to “sell” the QM concepts and tools and contribute to the results of company.
	<b>Behaviour</b>	Many community members do not comply with the business culture of the company, they demonstrate a bureaucratic “ISO” like approach, whereas in general the company culture is based on a more laissez-fair flexible and entrepreneurial approach. <sup>16</sup>
<b>Intellectual agility</b>	<b>Innovation</b>	Most of the QM people are settled, go along with the status-quo and existing tools already implemented, while few are continuously looking for new tools, methods and challenges.
	<b>Imitation</b>	The QM people are good at replicating and imitating proven tools.
	<b>Adaptation</b>	Generally, the QM people do not adapt methods, approaches and tools developed by other disciplines.
	<b>Packaging</b>	At first glance, it seems that most tools that are developed by QM people are used, thus it may be concluded that their packaging is good. A second glance reveals that many of these tools are used only because of external requirements (e.g. ISO), and their packaging is not good enough to attract genuine and real use by the intended end users. However, there are some exceptions that attracted end users, e.g. the EIS quality data system.
<b>Structural</b>		
<b>Relationships</b>	<b>External customers</b>	The QM people have close relationships with the QM representatives of the company's customers. They help to strengthen the image of TechCom as a high-quality organisation.
	<b>External suppliers</b>	The QM people co-operate closely with external suppliers, in order to certify, guide and train them to provide the quality level required by TechCom.
	<b>Shareholders</b>	The QM community is completely detached from the shareholders, and QM is not considered as an issue to be discussed at board meetings or press releases. This is a missed opportunity.
	<b>Society / community</b>	TechCom's QM community contributes a lot to the Israeli QM community – for example TechCom led the 1999 national quality conference.
	<b>External requirement</b>	One of the factors that helped TechCom to establish a strong QM system is the set of tough requirements of ISO 9000, TL 9000 and other certification bodies.
<b>Organisation</b>	<b>Technological infrastructure</b>	TechCom's technological infrastructure available for implementing QM tools is very good. This includes internal communication and computerisation (e.g. Intranet) infrastructures. The QM computerised tools, which are embedded in this infrastructure, are well above the national average. However, there is still a lot of work to do in this area, regarding friendliness, access and reliability.
	<b>Organisation</b>	The organisational culture of the QM community is aligned with the classical QM culture, but not aligned with the flexible action and business-oriented

<sup>16</sup> However, this can also be seen as an advantage, as the QM people balance the excessive un-disciplined, un-systematic approach of the marketing and R&D people.



	<b>nal culture</b>	culture of the company.
	<b>Processes, methods and tools</b>	The QM community has developed or acquired an arsenal of tools and methods. However, they are implemented only partially, due to lack of interest from the management or intended end-users side.
	<b>Management processes</b>	The community has a formal process to manage itself – with clear role definitions, co-ordination meetings, work plans etc. However, it is interesting to note that, in many cases, the community does not apply the tools they are forcing other units to use – e.g. internal audits, after-action reviews or systematic management of action items.
	<b>Organisational structure</b>	The organisational structure of the community is well defined, with clear role definitions, reporting structures, mechanisms to share knowledge etc. However, since the organisational change in 1999 when the SBUs QM departments became independent of the corporate QM, the level of co-operation between the corporate and the SBUs has decreased.
	<b>Organisational memory</b>	The community manages its organisational memory in a non-systematic way – there are no after-action reviews and other mechanisms to capture lesson learned. However, the experiences of the QM people partially compensate for this deficiency.
	<b>Data &amp; information</b>	The QM community is responsible for turning the vast amount of QM related information available to the company into value. In the last few years it has increased its efforts to analyse the collected data and information, and is now one of the leaders in this area in Israel.
	<b>Internal relationships</b>	Internal relationships with the top management have only been fair, as the interest of the management in QM issues is limited and they do not perceive QM tools to be management tools. With internal customers the relationships were also fair, as their QM activities are usually based on external requirements and not on genuine need or interest (but there are some exceptions of very good internal customers).
<b>Renewal &amp; development</b>	<b>New product development</b>	The QM community introduces new tools and methods to the company, as is well demonstrated in the QM history map.
	<b>Strategic thinking</b>	The strategy of the community is usually limited to a classical quality-based strategy, which does not put enough emphasis on complying with the business strategy of the company. <sup>17</sup>
	<b>Reengineering</b>	The organisational structure of the community is reengineered every 3-4 years. However, this re-engineering is not so deep regarding the main processes.
	<b>Challenge / opportunity</b>	The community would like to focus more of its activity in the core business process of the company. However, the owners of these areas do not require or even allow QM to support them, and therefore its activities are focused in the less critical areas of manufacturing or engineering (transfer of products from R&D to manufacturing).
	<b>Learning</b>	The community is not very good at articulating lessons-learned from its activities, or learning about the evolving needs of its internal customers.

Table 10-7: IC o TechCom QM Community – detailed description

<sup>17</sup> This is partially explained by the poor communication of the company's strategy to all levels.



10.7.3 The ICs of TechCom’s KM community

The map of the KM community is shown in the following figure.

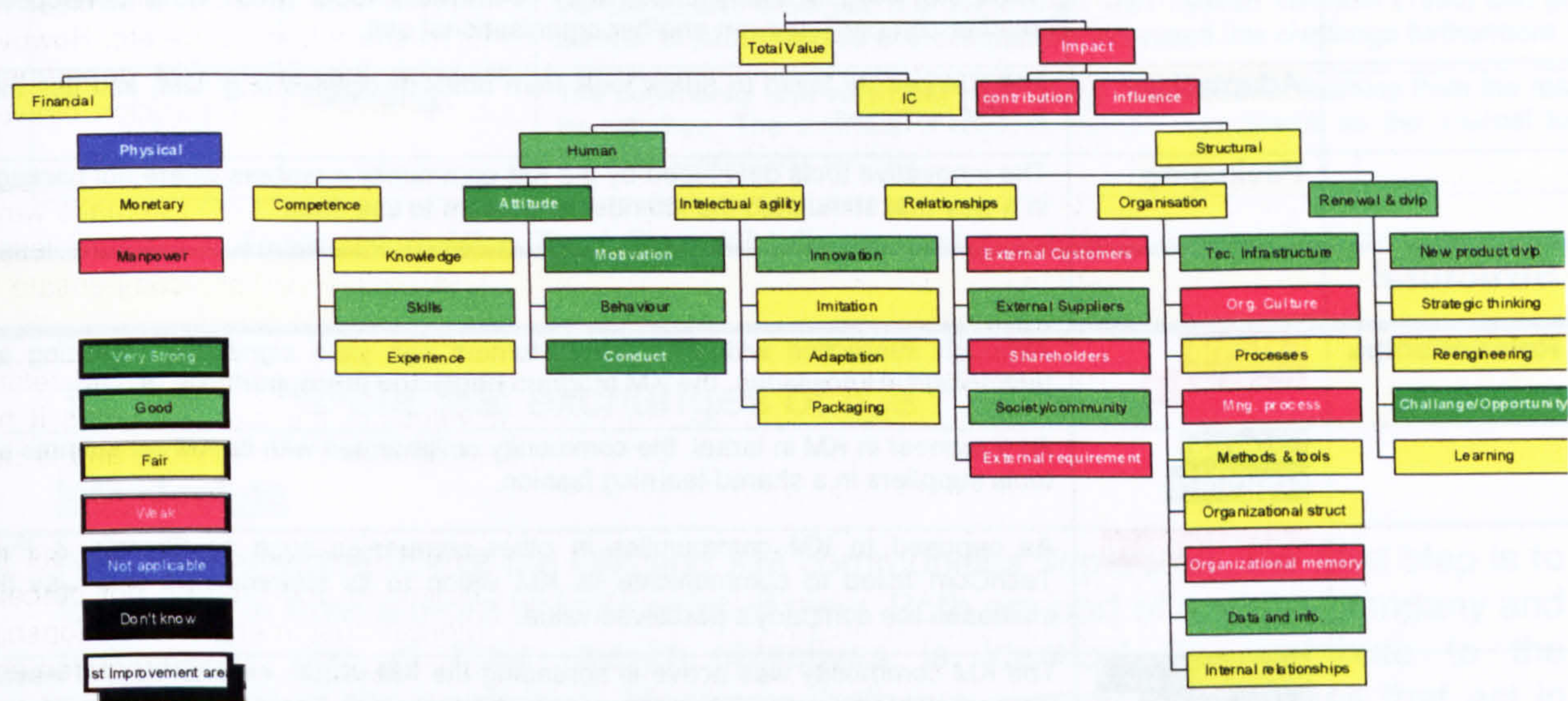


Figure 10-10: IC map of TechCom KM community

In the following section the author will explain briefly the logic behind this map. During the mapping process, a bottom-up approach was taken, but in the explanation a top-down description will be used, i.e. firstly the overall picture is explained and then its components are looked at in more detail.

**The Overall Capital** of the community is fair, as both its Intellectual Capital and Financial Capital are low. Therefore it is not surprising that the **Impact** of this community is poor.

**The Financial Capital** of the community is fair, with a relatively small dedicated annual budget (about \$300,000) (**monetary capital**), **only** relative to QM as only a few employees are working for the community on a full time basis (**manpower**).

**The Intellectual Capital** is fair, as both the Human Capital and the Structural Capital are fair as described in the following table.

Human		
Competence	Knowledge	The knowledge of community members in KM methodologies and approaches is relatively low, since most members preferred an intuitive approach rather than participating in formal KM training courses (which were already available when the community emerged).
	Skills	Many community members are provided with relevant skills gained in their former activities, such as skills in change management and project management.
	Experience	Most community members are not experienced in the methods and tools of the evolving approach of KM. Some brought relevant experience from a related field e.g.



		information management.
<b>Attitude</b>	<b>Motivation</b>	Most community members are very motivated to implement the new concept of KM into the company and make an impact on its performance.
	<b>Behaviour</b>	Many community members did not comply with the business culture of the company or with its formal "ISO Culture".
<b>Intellectual agility</b>	<b>Innovation</b>	Since the KM field is new both in the country and the company, the KM people demonstrated innovation firstly by initiating the KM program and secondly by inventing many of its tools.
	<b>Imitation</b>	As opposed to talk against "Re-inventing the wheel" the community members did not "walk the talk". In many cases they re-invented tools which were developed in another company or even another organisational unit.
	<b>Adaptation</b>	The KM people failed to adapt tools from other disciplines (e.g. QM) and use them for KM purposes.
	<b>Packaging</b>	The innovative tools developed by the KM community members were not packaged in a way that stimulated the intended end users to use them.
<b>Structural</b>		
<b>Relationships</b>	<b>External customers</b>	Although interaction with external customers can yield significant marketing and technological knowledge, the KM program neglected this opportunity.
	<b>External suppliers</b>	As a pioneer in KM in Israel, the community collaborated with its KM consultants and tools suppliers in a shared-learning fashion.
	<b>Shareholders</b>	As opposed to KM communities in other companies such as Skandia & PwC, TechCom failed to communicate its KM vision to its shareholders in a way that increased the company's perceived value.
	<b>Society community</b>	The KM community was active in spreading the KM vision, experience and lessons learned with emerging KM communities who looked at TechCom as an example to learn from. It significantly contributed to the Israeli KM community.
	<b>External requirement</b>	There is no formal equivalent of ISO 9000 in the area of KM. However, some of ISO 9000 requirements can be interpreted with KM "language". The KM community failed to use this opportunity to increase implementation.
<b>Organisation</b>	<b>Technological infrastructure</b>	TechCom's technological infrastructure available for implementing KM tools is very good. This includes internal communication and computerisation (e.g. intranet) infrastructures. However, the lack of standardisation posed some difficulties on company-wide knowledge sharing.
	<b>Organisational culture</b>	Excessive internal competition and politics within some parts of the community reduced its effectiveness significantly.
	<b>Processes, methods and tools</b>	The KM community designed several processes to enhance knowledge sharing in the company. However, most have remained as "recommendations" and were hardly implemented.
	<b>Management processes</b>	The community created and used effective internal management processes, which was based on a shared annual work plan, a shared budget and periodical co-ordination meetings.
	<b>Organisational structure</b>	Theoretically, the organisational structure of the community was good, based on the KM forum with representation from all relevant units. However, most members came from the corporate support functions, while the participation of the business units was poor.
	<b>Organisational memory</b>	Although the community existed only for few years, its intensive activity yielded a lot of "lessons learned" on KM implementation. However, there was not a process to capture and share them (the exception was the review of the Experts System, one year after it was launched).
	<b>Data &amp; information</b>	The KM community is responsible for turning the vast amount of information available to the company into value. In effect, this happened only partially (e.g. in the case of competitive information)
	<b>Internal relationships</b>	Internal relationships with the top management have been only fair, as the KM program was never discussed in depth by the management. With internal customers the relationships were also fair, as they usually did not fill the urgent need to cooperate with KM people. There have been some nice internal alliances in specific projects (with HR, QM and business development).



Renewal & development	New product development	The community developed many new “products” (KM tools) and allocated lots of its resources (perhaps too much) to this activity.
	Strategic thinking	The community took one strategic decision when it started – where to focus. However, there was never an effort to develop a strategic plan, and the approach was quite bottom-up.
	Reengineering	Although the community realised that its organisational structure is problematic and with limited impact, there was never an effort to re-engineer its structure in order to link activities more closely to the business units.
	Challenge opportunity	The scope of activity of the community at the core of the company do not understand the critical success factor. Re-write do not understand. Organisational changes after the community emerged, e.g. the merger with Tadiran Teleocm (1998) and growing number of joint ventures and competition increased this challenge furthermore.
	Learning	The community was very busy with “doing” and less with learning from the results of its activities. The analysis of lessons-learned was scarce as the internal learning between community sectors.

Table 10-8: IC o TechCom KM Community – detailed description

10.7.4 Potential exchanges of ICs

Introduction

After mapping the ICs of the QM and KM communities separately, the next step is to look at them from a more holistic point of view. Both are part of a single company and supposedly one of their overall objectives is identical (to contribute to the performance of the company). Moreover, both are support communities that act in similar areas. Therefore, it is interesting to look at both ICs maps together in order to explore potential synergies, and exchange of complementary ICs.

Sources of insights

The author based the suggested flows on the information accumulated so far in the previous sections:

- 1. The analysis of challenges of each community, as discussed in the literature (sections and 4.7).
- 2. The analysis of various relationship types between QM and KM, as discussed in the literature (sections 5.5)
- 3. The analysis of the challenges of the QM and KM communities of TechCom.
- 4. The analysis of co-operation patterns between QM and KM at TechCom .
- 5. The mapping of the IC of TechCom’s QM and KM communities, done separately for each community. The insights from the author’s map are supported by other maps generated by other TechCom people.
- 6. And finally, a look into both ICs maps at the same time.

These sources are presented in the following figure:



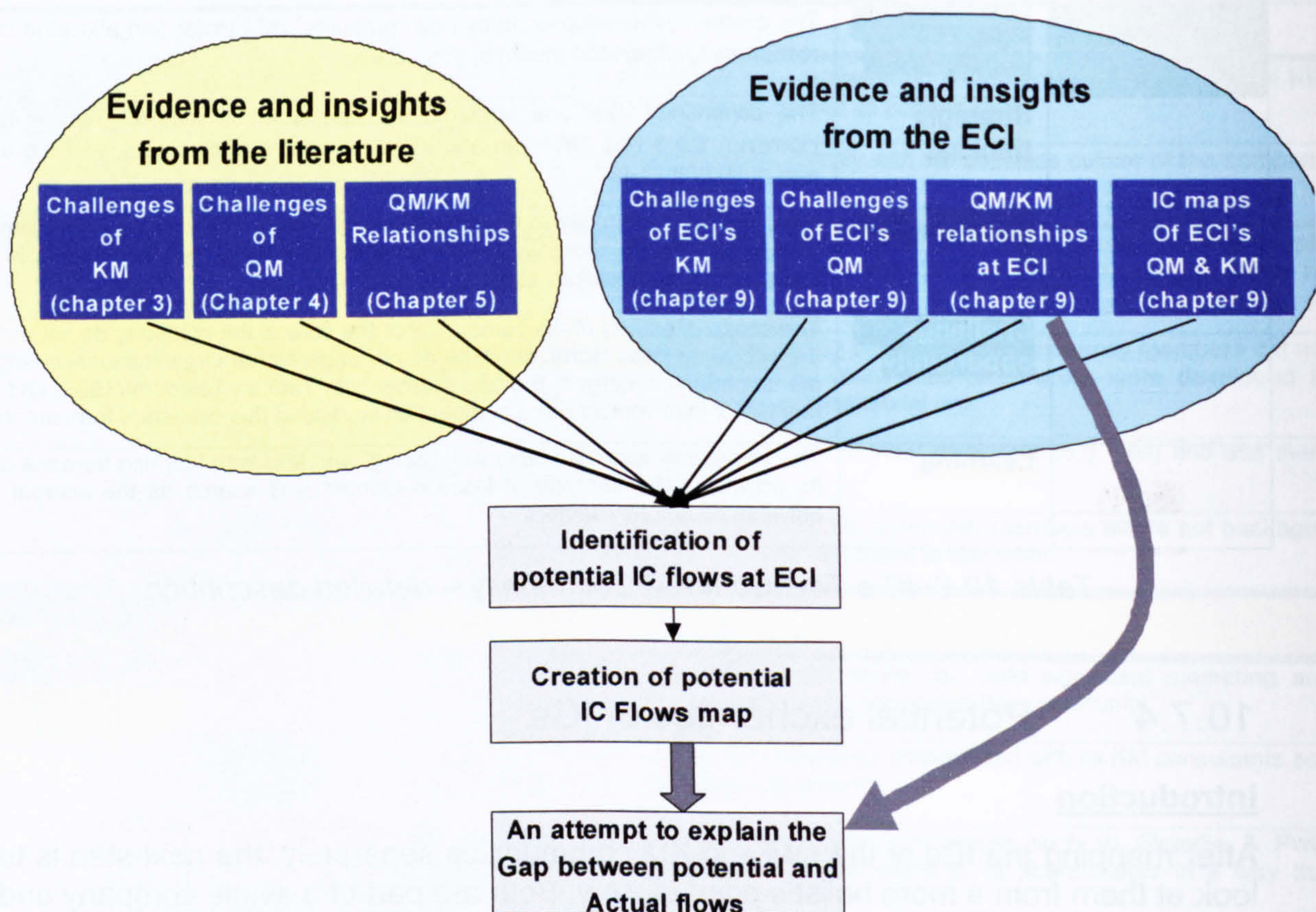


Figure 10-11: ICs exchanges at TechCom: sources of insights

### **Proposed ICs flows:**

Drilling down into the rich set of information listed above resulted in identification of many potential ICs flows.

The proposed flows are illustrated in the following IC Flows map. The map demonstrates that each community can contribute IC to the other community, but the potential of flows from QM to KM is higher than the potential flows in the opposite direction. The higher IC of the QM community may explain this. It is important to make a comment at this point: The author has mapped only the most significant potential flows, according to his judgement of the situation at TechCom. The mapping exercise is an automatic process of drawing arrows from "red" boxes (low ICs) to "green" ones. The many information sources gave the author ideas as to potential flows, and these ideas have been filtered using the reality of TechCom, as known to the author from been exposed to both communities for several years direction. The higher IC of the QM community may explain this. It is important to make a comment at this point: The author has mapped only the most significant potential flows, according to his judgement of the situation at TechCom. The mapping exercise is an automatic process of drawing arrows from "red" boxes (low ICs) to "green" ones. The many information sources gave the author ideas as to potential flows, and these ideas have been filtered using the reality of TechCom, as known to the author from been exposed to both communities for several years.



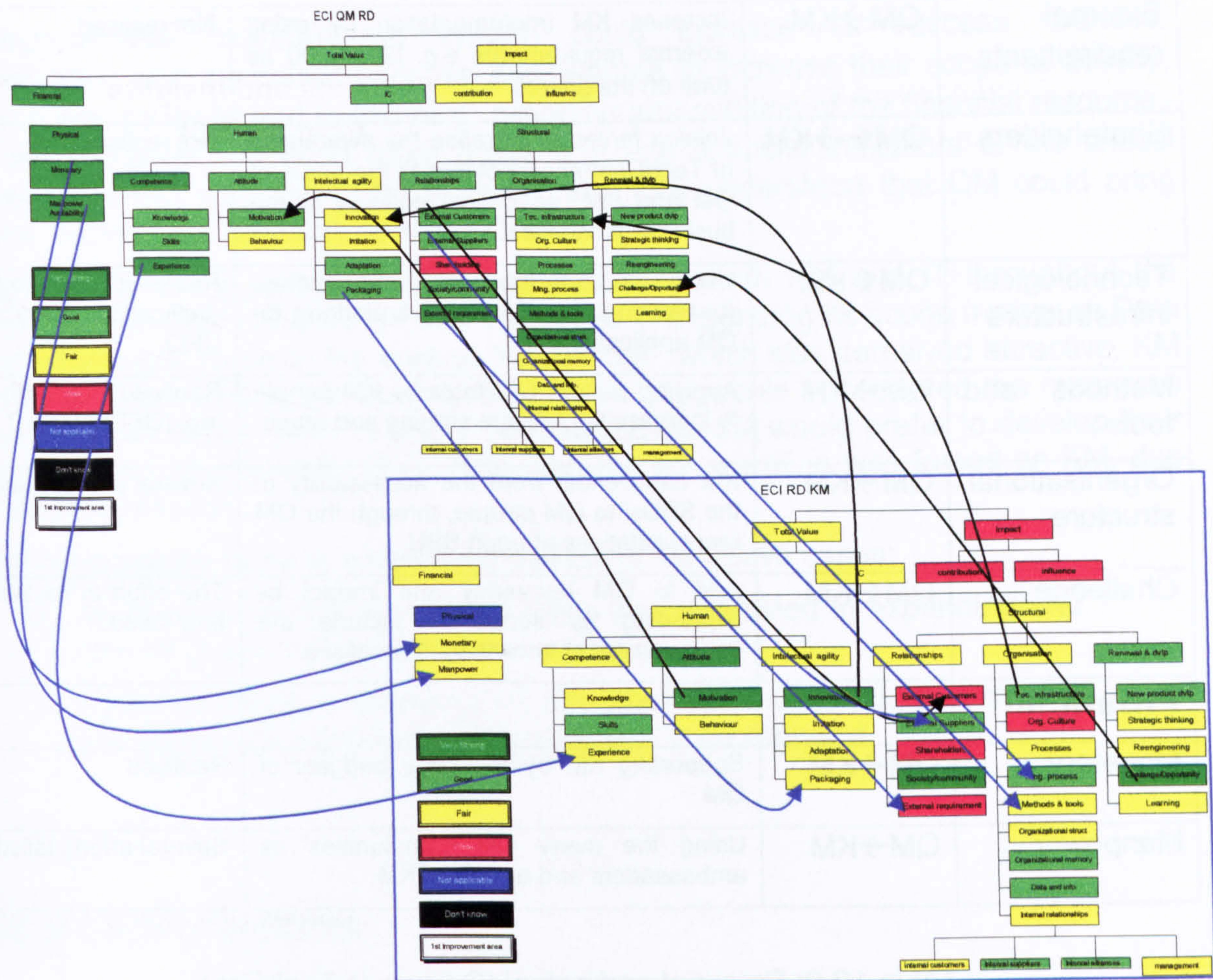


Figure 10-12: TechCom: Potential IC flows map

In the following table each potential flow is shown and the actual realisation of the flows at TechCom is reported.

Capital type	Flow direction	Explanation	Actual status	flows
<b>Human</b>				
Experience	QM→KM	Share experience on change management and implementation issues	Implemented only by CKO	
Motivation	QM←KM	Induce an attitude of “changing the world” to the QM community	Not realised	
Packaging	QM→KM	Support KM in packaging its products, so they attract more usage.	Implemented only by CKO	
Innovation	QM←KM	Help QM to increase its innovation level as well as to demonstrate it to various stakeholders.	Implemented only by CKO	
<b>Structural</b>				
External customers	QM→KM QM←KM	Use the relationships of QM with TechCom customers to widen the scope of activity of KM. also use KM to influence how TechCom and TechCom’s QM is perceived by, the quality professional coming from the customer side.	Only the 2 <sup>nd</sup> flow was implements, by CKO and VP QM	



External requirements	QM→KM	Increase KM implementation by using external requirements e.g. ISO 9000 as (one of) the drivers.	Not realised
Shareholders	QM←→KM	Joining forces to increase the awareness of TechCom shareholders to the value of QM and KM, as critical enablers of the business processes.	Not realised
Technological infrastructure	QM←KM	Using the extensive KM infrastructure (based on Lotus Notes) as a platform for QM applications	Realised in two QM applications, by the CKO.
Methods and tools	QM→KM	Applying proven QM tools by KM people to increase knowledge sharing and reuse.	Realised only with one tool (QFD) by CKO
Organisational structure	QM→KM	KM can benefit from the accessibility of the SBUs' to QM people, through the QM representatives at each SBU	Several efforts failed
Challenge	QM←KM	Add to QM relevancy and impact by expanding its scope to include the improvement of knowledge processes.	The effort to realise this flow failed.
<b>Financial</b>			
Monetary	QM→KM	Supporting KM by the large budgets of QM	Realised
Manpower	QM→KM	Using the many QM communities as ambassadors and agents of KM	Several efforts failed

*Table 10-9: Potential and actual IC flows at TechCom*

As shown in the table, most IC flows types were not realised or were realised only partially. In the conclusions section of this chapter an attempt is made to explain the gap between the potential and actual flows.

## 10.8 Additional communities

In this chapter the author has focused on the QM/KM interactions. However, it is interesting to note that both communities had various forms and levels of co-operation with other communities. For example:

**QM and HR:** during the happy days of the TQM initiative at 1992-1994, there was a very close co-operation between the two communities. Indeed, they led the initiative together, realising that they have complementary competencies: while HR contributed its superior understanding in culture and people issues related to TQM, the QM people mastered the processes and quantitative side of TQM. Moreover, both realised that implementation of TQM would be very difficult, considering the indifferent attitudes of most managers toward process improvements. Therefore they thought that co-operation could increase their appeal to top management. Once the initiative faded away, the comprehensive co-operation of QM/HR faded away as well, and was never recovered. HR/QM co-operation after the TQM period was limited only to relatively small-scale joint efforts (e.g. M&A process and Performance Measurement).

**QM and Finance:** in 1998-2000 there was strong co-operation between the two communities, based on a joint effort to establish a corporate performance measurement system. The QM community was interested in this co-operation because it was aware that most top managers were very attentive to financial reports, and thus using the periodical financial reports, as a platform for a very



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comprehensive measurement system could increase its success chances. Accounting was interested because they wanted to increase their scope of activity, which was so far limited to planning, reporting and auditing of the financial resources of the company. Covering more areas e.g. non financial indicators of the critical business areas was appealing to them, and they understood that QM could bring skills, experience and tools related to this area.

**KM and IT:** there was a strong co-operation between KM and IT throughout the lifecycle of the KM initiative. IT was interested in expanding its scope from pure Data and Information focus to the area of “Knowledge” which was perceived attractive. KM was less interested in the co-operation – the KM people appreciated the resources and computerisation skills of the IT community, but still would prefer to develop their applications independently of IT. However, the co-operation was forced on KM, due to political reasons.

**The conclusion:** there is a repeating pattern in the above cases:

- ❑ at least one of the two communities was interested in expanding and renewing its scope of activity
- ❑ both communities realised that the other community could contribute complementary Intellectual Capitals, e.g. competencies.

## 10.9 Conclusions

### 10.9.1 How this case supports validation?

The case suggests some insights that relate to most of the research questions. In the following section the author presents the original research questions and shows how the case supports the exploration of each.

#### **I. NEED and CONTEXT**

##### **Q1: Why do the QM and KM professional communities need to improve?**

Both TechCom's QM and TechCom's KM communities are perceived by external observers as very strong – the QM community won the national quality award, and the KM community is regarded as a pioneer in the field in Israel and as an example to learn from by followers in the area. However, analysis of these communities shows that their impact is only fair (in the QM case) or very poor (in the KM case).

The analysis also revealed that both faced significant challenges due to inherent weaknesses and shortcomings. The evidence in the case agrees with the analysis of the problems of QM and KM provided in the literature. They both face conceptual as well as implementation, relevancy, scope and positioning problems. The author has used the four groups of QM root causes, and the four groups of KM root causes developed previously as a way to structure the analysis. The KM suffers from infancy problems and did not reach a level of maturity. QM is an ageing community (organisationally as well literally) that was at its peak influence several years ago and is now in decline. Both suffer from implementation as well as conceptual problems, similarly to the evidence in the literature. Therefore, both needed and tried to leverage their strengths, influence and impact on the company's performance and organisational life.



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## **II. CORE RESEARCH**

### **Q2: What are the potential interactions between QM and KM professional communities?**

In the case of TechCom, many of the potential patterns of QM/KM interactions, as found in the literature, were realised. It was interesting to note that several patterns co-existed at the same time, covering a wide spectrum from complete mutual ignorance to several co-operation patterns. The case contributed to the validation of the extensive QM/KM interaction repertoire identified in Chapter 5.

The level of QM/KM co-operative interactions was not extensive. The author expected to find much more co-operative interactions between QM and KM, based on their commonalities and differences:

- ❑ Both have similar objectives – to support the line units in doing their work better. The list includes provision of support to R&D and Marketing (QM was also supporting manufacturing, while KM was not involved in this area). Both were active in efforts to reduce waste (e.g. rework and Re-Inventing the Wheel). Both were concerned with helping TechCom in reducing Time to Market. The overall objective of both was to support the competitiveness of TechCom.
- ❑ Both held similar values and basic assumptions, e.g. the importance of processes and cultural change and technology.
- ❑ Both suffered from large amounts of problems, many are similar, e.g. being considered as an overhead, unwillingness of their “internal customers” to invest efforts in long-range process improvements, and difficulty in showing benefits (in the case of QM, this problem referred only to some sections of the community).
- ❑ Complementary weaknesses and strengths, as is evident from looking at their IC maps.

It is important to note that even when there have been co-operative relationships, most were limited in their scope and not sustainable, e.g. the joint re-use project and co-operation on document management.

Alongside some (limited) co-operative interactions, the analysis reveals some less co-operative ones. For example, most of the QM and KM people completely ignored the other community. There was some underground mutual criticism as well. There was also an attempt of QM to take over KM.

### **Q3: What are the Intellectual Capitals of the QM and KM professional communities?**

The findings from the IC mapping methodology revealed that the IC of the QM community is significantly stronger than that of the IC of KM. **This finding was surprising to the author.**

Most ICs of QM are *Good* or *Very Good*. QM was relatively poor in Intellectual Agility and Renewal and Development capital and strong in most forms of Structural Capital – especially Organisational Capital. The Relationships Capital of QM is only Fair, which is surprising as two of the TechCom QM community's are “customer focus” and “internal customer-supplier” relationships.

The KM community was poor in several categories of Structural capital, as expected (relationships and organisation). This is not a surprise, when the low level of



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institutionalising of KM is considered. KM was also poor in two Human Capital categories - in competence and intellectual agility. In addition, its Financial Capital was poor as well. The strongest intellectual capital of KM is its “challenge” capital, which is not hard to explain in a Hi-Tech company that competes on its innovation level, development capability and understanding of the market, all directly relate to better management of its knowledge. However, in contrast to the size of the challenge addressed by the KM community, its impact was marginal. There was no evidence (even anecdotal) of any contribution to TechCom’s performance that could be linked to KM. Moreover, the influence of KM on the day-to-day operation was minimal, if any.

Both communities demonstrated a significant gap between their IC and their impact.

#### **Q4: What are the potential flows of Intellectual Capital between the QM and KM professional communities?**

The case demonstrated that there are many potential flows of ICs, i.e. flows that are based on complementary ICs and could increase the ICs of both communities, and perhaps contribute to their impact on the company’s agenda and performance. The author identified more flows from QM to KM than flows in the opposite direction. The superior IC of QM may explain this. Two flows of special interest are the “challenge/opportunity” potential flow from KM to QM, and several potential flows from QM to KM in the area of Relationships Capital. However, most of the potential flows have not been realised or were realised only partially by small sections of the communities.

### **III. BUSINESS IMPLICATIONS**

#### **Q5: What are the business implications of the flows of Intellectual Capital between the QM and KM professional communities?**

The (relatively few) successful examples of IC flows show that they can benefit both communities. One of the successful flows (the improved joint-venture process project) had direct links to the company’s core business processes and results, while the other could have impacted the bottom line in a less direct way.

#### **Advice for business: Operational issues (how to manage IC flows)**

The case suggests that several factors can contribute to the realisation of potential flows:

- Having a **complementary ICs** in both communities, which enhance the justification for IC flows (in TechCom, this was the case with many ICs categories).
- Having **explicit intention** of the leaders of both communities to encourage a strong QM/KM co-operation (as was the case in TechCom with the CKO and QM VP determined to encourage the realisation of potential synergies)



- 
- Having a person or a small group which belong to both communities and can act as a **bridge** between them (as was the case with TechCom's CKO, who was the driving force for most co-operation efforts)

Several factors can reduce the probability that such flows will occur:

- **Lack of awareness** of the potential flows. This was the case in TechCom, where most community members on both sides were not aware of the activities, assets and strengths of the other community. The awareness of the leaders of both communities was a critical but not sufficient condition.
- **Lack of respect on both sides** led to almost no willingness to learn and get help from the "other" side. While the KM people perceived QM as bureaucratic non-value adding approach, the QM people viewed KM as dreamers and a field of 'fad' activity.
- **Cultural problems** on both sides: in KM, the resistance to "walk the talk" and learn and adopt methods and other ICs from another professional discipline; in QM, a tendency of many people to retain the old traditions (and professional scope) and avoid change.

#### **Q6: Does the IC mapping methodology show utility as an improvement tool in the context of professional communities?**

The author made active efforts to increase synergies and co-operation between QM and KM, when working for TechCom. One can only speculate that if he and other key players like the QM V.P. were provided with the IC mapping tool at that time, this could have sharpened their perception of potential and actual co-operation opportunities and challenges, and helped focus their efforts. Moreover, if the tool was available at that time, it could have been used to communicate and discuss the QM/KM co-operation vision and practical opportunities at the KM forum and QM corporate co-ordination team.

### **RESEARCH TOOLS**

#### **Q7: Does the IC mapping methodology show utility as a research tool?**

The author believes that the IC mapping tool added value to the scientific exploration of the IC flows between TechCom QM and KM communities. It helped gain new perspectives in both communities and interactions between them, and arrive at surprising conclusions (e.g. that the QM's IC is superior then KM's IC, in the case of TechCom).

## **10.9.2 Strengths and weaknesses of the case**

This case is based on data gathered by the author during 1993-2000, when he was an active member of the QM and KM community. The advantage is that there was access to a lot of relevant data and information that is not available to external researchers. Moreover, the intimate familiarity with the inside, realities and behind-the-scenes of the QM and KM communities was instrumental for deep interpretation of the raw data and facts<sup>19</sup>.

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<sup>19</sup> In 1998 and 1999 there were two efforts to assess the situation of the QM community – one by the



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However, this is the very source of one of the two weaknesses of the case – the interpretation of the data by the author was subjective and influenced by his history, mind-set and opinions.

The other weakness is the limited scope of the case – it covered the story of QM and KM communities of a single company, which might be not representative.

The author has tried to offset both weaknesses by triangulating the suggestions from the TechCom case with evidence from the literature, other specific organisations and a national QM and KM community. In addition, when analysing TechCom IC flows, the maps developed by the author and by two other people from TechCom are used as a reference.

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National Quality Award referee team and the other by a team of researchers from Minnesota University. While both highlighted the strengths of the community in great details, their reports reveal that the QM community weakness, shortcoming and challenges remain hidden to the external analysts.

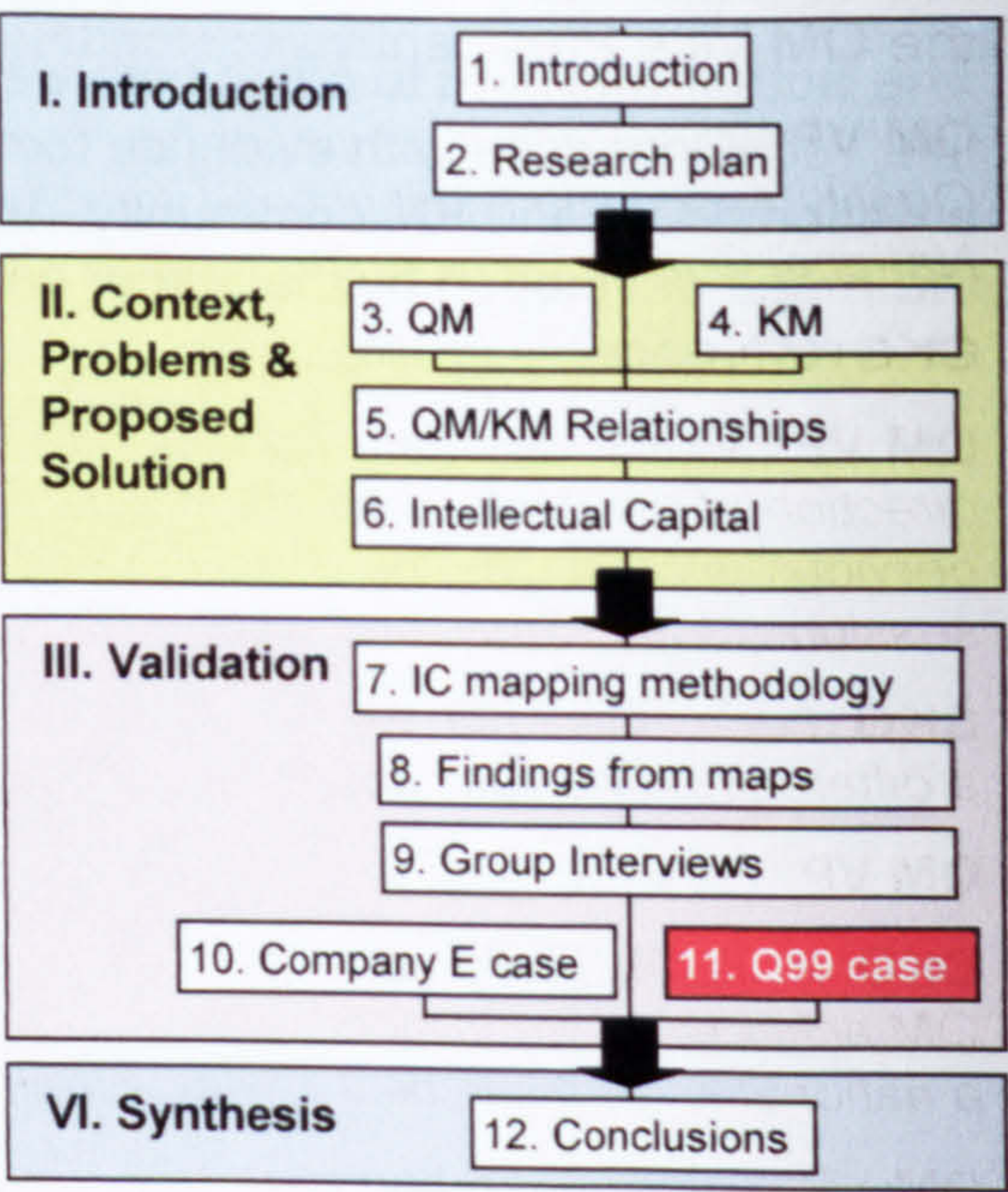


# 11 Case study II: 1999 National Quality Conference

## 11.1 Aims

The case of the 1999 Israeli National Quality conference is one of three main validation avenues taken by the author. This chapter answers the following questions:

- Why this case was selected? What are its benefits and limitations?
- What are the strengths and weakness of the communities involved in the conference?
- What was planned, and what actually happened?
- How the findings from this case address the research questions?
- What are the long-term impacts of the conference on IC flows between the national QM and KM communities?



The conference poster



## 11.2 Prologue – how it all began?

February 12<sup>th</sup>, 1999, 14:30, TechCom's headquarter offices, Petah-Tikva. Itzik Dana, the QM Vice President visits Ron Dvir, the CKO<sup>20</sup>.

**QM VP:** *Ziva Patir, the head of the Israel Standards Institute and the president of the Israeli Quality Association, just phoned me. She tried to volunteer me to be the chairman of the next National Quality Conference, in November. Ziva gave me 24 hours to decide.*

**CKO:** *What are the implications?*

**QM VP:** *Mainly very hard work for the next 9 months. The author will be responsible for the direction of the conference, the program, the budget, the logistics and public relations. In the pervious years it was the largest professional conference in the country, with more then 100 sessions, 300 lectures and 2,000 participants. What do you say?*

**CKO:** *I don't think that we should do it, we are too busy with our internal issues...I can make a difference. I wouldn't go for 'more of the same' and run a traditional conference.*

**QM VP:** ???

**CKO:** *In TECHCOM I am experimenting with our new KM program, and trying to link it to the QM activities. If we think this is a good idea for the company, we could try to do the same, at a national level. It can be the central theme of the conference*

**QM VP:** *This is not a bad idea. We could call it the "Quality by Knowledge" conference. I will contact the Quality Association and offer it as a package deal – Then we lead the conference if it will be centred on this QM/KM issue.*

**CKO:** *Good luck; let's shake the QM people! Let's start the new quality revolution.*

Nine months later, the conference was born. 21<sup>st</sup> November 1999, 09:00. Amram Mitzna the mayor of the hosting town Haifa, Itzik Dana, the conference chair, and Ron Dvir, the conference program manager, opened the conference.



Figure 11-1: The conference opening session.

*Right to left: Avraham Huly, Israel Quality Association president, Amram Mitzna, mayor of Haifa city, Ran Cohen, Minster of Industry & Trade, Yehuda Vilek, Chief of Police, Israel Shutland, head of the northern section of the Industries association, Ron Dvir, conference program leader*

<sup>20</sup> This is a true story, but since it was not recorded, it reflects the rational of the discussion and arguments, but not the exact wording.



## 11.3 Why the conference was chosen as a case study?

The conference was not designed as a research tool. It was decided to centre it around the subject of “*Quality by Knowledge*” before the author formulated the research questions. However, when the author looked for ways to support the validation of these questions, the advantages of the conference as a case study became apparent:

- The conference was aimed explicitly and directly at increasing the ICs flows between the KM and QM communities. This objective is expressed clearly in the conference planning (e.g. the “call for paper” announcement) and program.
- The conference enabled the author to test the QM/KM ICs flows at a national level. This added a new and larger perspective to the findings from the other case study, which is limited to one specific company.
- The case enabled the author to have a historical perspective, by analysing the programs of the annual conferences that preceded and followed the 1999 event.
- The author had access to a lot of information – both publicly available (e.g. conference program) and confidential information (e.g. the results of the participants feedback forms or reports from behind the scene of the conference planning process).

## 11.4 Background: the National QM and KM communities

### 11.4.1 Introduction

The background information on the Israeli QM and KM communities is based on the knowledge of the author, who was involved with the KM community since its emergence and with the QM community since 1993. As a result of his position as the first CKO in Israel, he was active in most cross-organisational activities of the KM community. In his role as the program manager of the 1999 quality conference, and then member of the steering committees of all the following conferences, he became well aware of most of the activities in the QM area.

### 11.4.2 The QM community

#### 11.4.2.1 Definition

In order to define the Israeli QM community, the author uses the generic definition of a QM community:

*The Israeli QM professional community is a network of formal and informal communities of professionals and organisations whose core activity is strongly grounded in the different domains of QM, and identify themselves explicitly with this discipline.*

#### 11.4.2.2 Description of the community



As opposed to the case of the KM community that is discussed in the next section, the QM community is composed of several well defined (but overlapping) sub-communities. The largest sub-community is the Israel Quality Association that includes 1,500 members. There is no official “head-count” of the overall Israeli QM community, but the author believes it includes several thousands of professionals.

The sub-communities are described in the following figure.

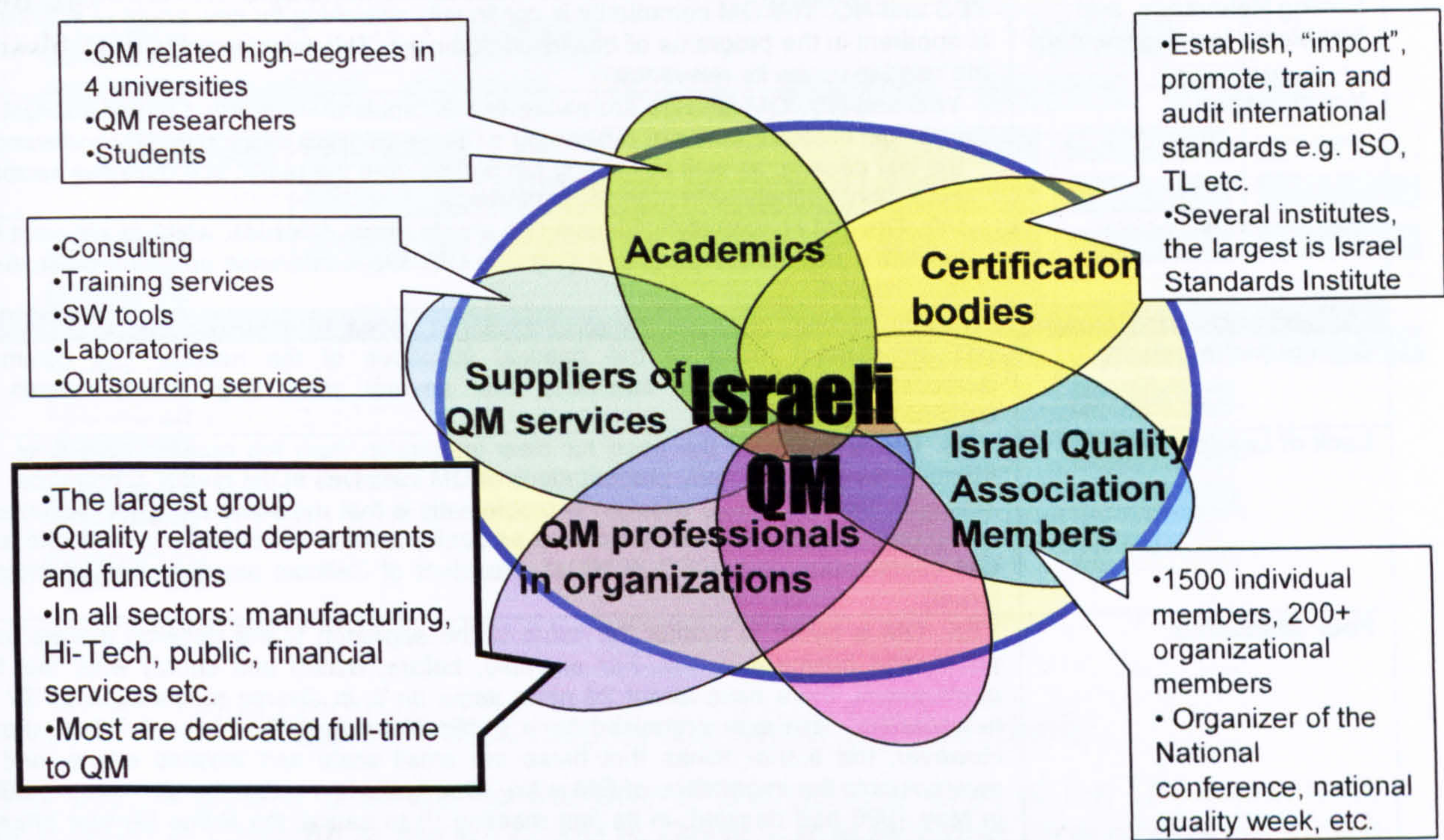


Figure 11-2: The sub-communities of the Israeli QM community

### 11.4.2.3 Challenges

The following table relates some of the communities’ problems with the ones identified in the literature and is classified into a QM problem framework. It should be noted that some of the evidence for the applicability of these challenges to the community is based partially on anecdotal evidence. Moreover, there is significant diversity between the different groups of the Israeli QM community. Thus, the table presents a typical scenario. In some areas mixed or conflicting indicators are presented.

Note: Some of the evidence is taken form the Quality 1999 conference case, which is described in detail in the following sections of this chapter.

Claims in literature	Indications
The expectations are very high	YES: In 1992 the Israeli government established the “Prime minister office for Quality and Excellence”, and the QM manager of HiDef was nominated as its head. This demonstrated the expectations from QM to lead the national search for excellence. However, in 1996 the office was cancelled.
...and actual results are not satisfying	YES: There is a decline in many QM programs, both in industry and public organisations such as the army. This might be an indication for dissatisfaction.
<b>Conceptual problems</b>	
Confusion: No focus and lack of clear definition	YES: The content of the National conferences programs shows a large diversity of focus areas – covering standards, safety, manufacturing, SW QA, environmental quality, leadership etc. This diversity can be interpreted in two ways, and the author thinks that both are applicable: a) the scope of quality discipline is indeed wide, and the community covers all its important areas, and b) the community has lost its clear focus, and is thinly spread over many areas. In discussions in the 1999-2002 conference steering committees about the program structure, the two themes were represented.
Too mechanistic and	YES and NO. Many organisations which have recently joined the QM world (e.g. only



<b>control-oriented</b>	recently gained the ISO9000) are focusing much of their QM related efforts on audits and standards. However, other organisations, and most notably the ones with more mature QM programs, are trying to balance these control mechanisms with other approaches.
<b>Stand-alone approach</b>	YES and NO. The QM community is aware of this problem, and invited other disciplines to work together towards achieving shared goals. A clear indication is the number and distribution of the non-QM people who participate in QM conferences. For example, this was the case with inviting HR in the mid 90's to work together in TQM programs (and they participated in conferences at that time, but almost disappeared in the late 90's).
<b>Losing Relevance, and 'problems leaving the can'</b>	YES and NO. The QM community is continually searching for new areas of activities, as is apparent in the programs of quality conferences. This might indicate that it is aware of the need to renew its relevancy.
<b>Not strategic</b>	YES and NO. QM leaders are aware of this problem. In an effort to position QM in a strategic position, they are organising a "Strategy" track in each quality conference in the last decade, as well as inviting top figures from the public and business sectors to act as key note speaker in these conference.
<b>Narrow focus</b>	NO. The QM community is focusing on a wide range of issues, which is apparent from the QM's conference programs (e.g. the QM 1999conference program, presented in this chapter).
<b>Implementation problems</b>	
<b>Lack of sustainability</b>	NO. In general, most of the national initiatives of the national QM community demonstrate considerable continuity over several years (e.g. quality awards e.g. certification programs).
<b>Lack of Leadership</b>	YES. QM is aware of the need for clear leadership from top management level. This theme is repeated in many presentations of QM initiatives in the quality conference. One indication that the actual situation is problematic is that the same few general managers of top organisations who are perceived as quality leaders are repeatedly invited to talk in QM conferences (e.g. CEO of HiDef, president of Cellcom and president of Motorola Israel).
<b>Poor Marketing</b>	YES. QM is trying to market the value of the approach to the decision makers in the public and business sector. For example, before, during and shortly after the 1999 conferences, there have about 20 news items on it, in diverse media such as TV and newspapers. This was organised by a Public Relations office hired for this purpose. However, the author thinks that these are small scale and isolated efforts, and the awareness to the importance of QM is low. One indication is that the government elected in May 1996 had decided, in its first meeting (!) to cancel the Prime Minister office for Quality and Excellence, established four years earlier.
<b>Lack of time and resources</b>	YES. This is a repeating complaint that faces QM initiatives and presented in many presentations in the quality conference.
<b>Resistance at all levels</b>	YES. One indication is that very few managers, who are responsible for operations, participate in quality conferences (e.g. R&D or Marketing managers). This is despite the fact that possible ways to improve performance in the areas they are responsible for are discussed in the conferences.
<b>Controversial financial justification</b>	YES. There is a growing interest in the models of Cost of Poor Quality, as a way to show the justification for investment in prevention efforts (which reduce the cost of Internal and External Failures). This is why, in the 1999 conference, the establishment of a plan to measure the national cost of poor quality was launched. The above argument was highlighted in the announcement notice.
<b>Positioning problems</b>	
<b>QM is a Stuff Function</b>	YES. See argument in the "resistance of all levels" item.
<b>Aging</b>	The author participated in all steering committees of the national quality conferences since 1999. At the age of 40+ he was significantly younger than most members of these committees. Although statistical data is not available, this is also the impression given in the conference events: fewer young professionals then seen in other conferences such as Knowledge Management or Project Management ones.

*Table 11-1: Challenges of the Israeli QM community*

In conclusion the national QM community is suffering from many of the problems identified in the literature. In this respect, it is a typical QM community. However, many problems have been classified under the "YES and NO" category. This means that some parts of the community suffer from these problems, while others do not.

#### **11.4.2.4 ICs of the QM community**

Based on the knowledge of the author and two maps of the Israeli QM community drawn in the expert interviews phase, the author suggests the following map:



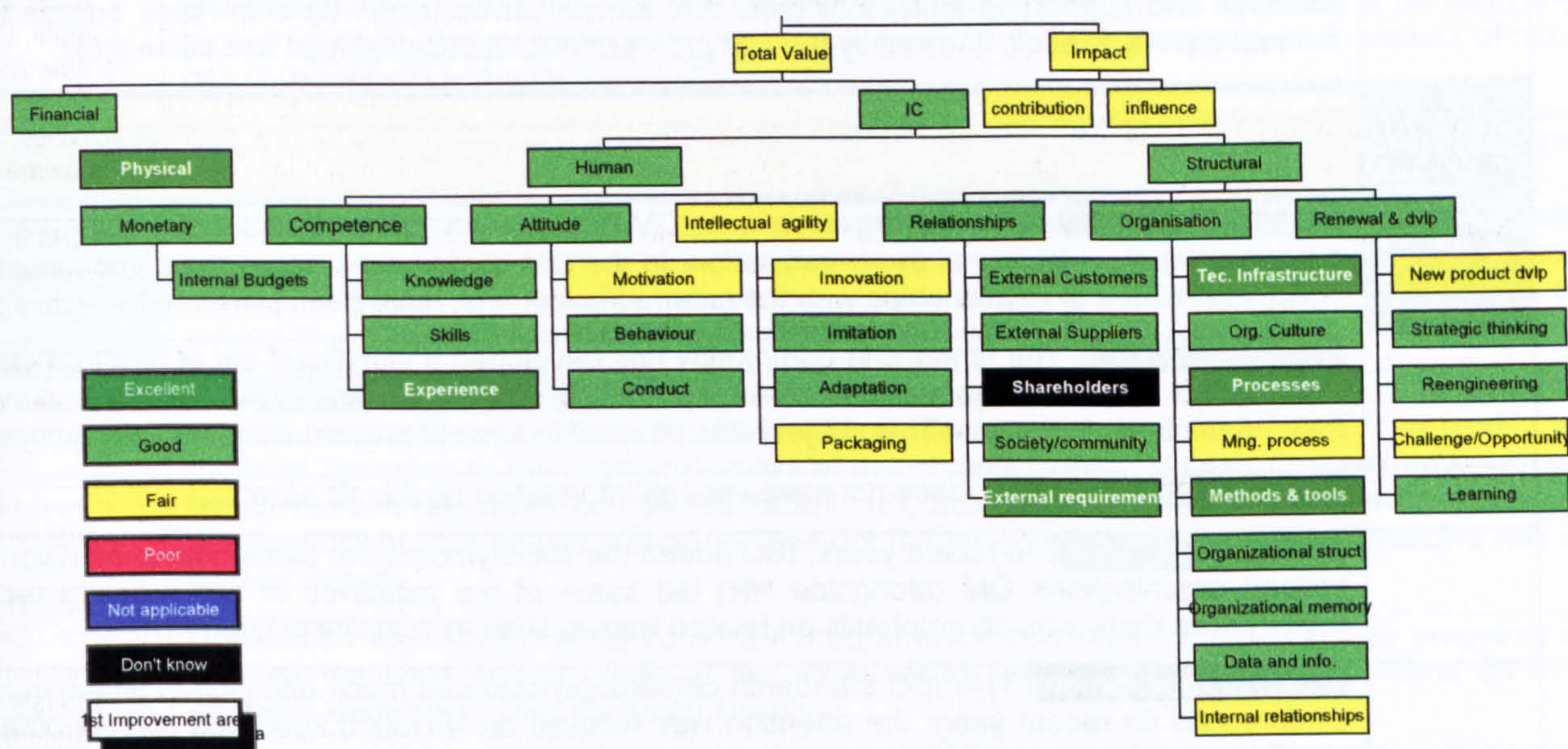


Figure 11-3: IC map for the Israeli QM Community

The overall picture is similar to the one of the general map of the QM community presented in Chapter 8: the IC of KM is Good – due to Good Structural and Human Capitals. There is a significant gap between the IC and Impact of the community..

The following table explains the logic behind the scores:

Human	
Competence	<p><b>Experience:</b> The average age of QM professionals is higher then the age of their colleagues in other professional disciplines, and many of them are well experienced both in QM and in the line function they came from (e.g. R&amp;D or manufacturing). This observation is based on conversations with many of the quality conferences participants in the last years. Another indicator is the experience of the members of the quality conference steering committees – most have been in the profession for 15 years.</p>
	<p><b>Knowledge:</b> QM professionals are well skilled in their practices. The community has a significant system of certifications for sub-professions e.g. SW Quality Assurance or Reliability Engineers. The certification systems are complemented by several academic courses in Quality – mostly at a Master degree level.</p>
	<p><b>Skills:</b> QM professionals are generally skilled in their practices, as a result of their knowledge and experience.</p>
Attitude	<p><b>Motivation:</b> This is perhaps the down side of experience. The author met several QM professionals who are completely dedicated to their organisation and profession, but he also met many others who have been in the same position for many years (as vertical progress in the QM profession is limited) and are less motivated.</p>
	<p><b>Behaviour:</b> QM professionals are expected to represent and promote the “official version” of the company culture. However, many of them do not behave according to the actual business-oriented culture of their organisation (this observation is based on conversations with QM managers from HiDef , HIAERO, IDF and TechCom).</p>
Intellectual agility	<p><b>Innovation:</b> the author met many innovative professionals in the QM conferences who brought with them new ideas and presented them in the conferences. However, as was seen from their presentations, other presenters took a traditional approach towards their profession,</p>
	<p><b>Imitation and adaptation:</b> The author observed many cases of “re-inventing the wheel” in the QM</p>



	professional community. Many presenters showed tools that they had developed, although mature and proven tools, addressing the same areas had already been developed by other organisations.
	<b>Packaging:</b> QM professionals are not very good at packaging their products (which are usually methods and supporting tools) into tools that are perceived useful by employees outside their community. As a result, it is mostly the QM professionals themselves that use these tools.
<b>Structural</b>	
<b>Relationships</b>	<b>External customers:</b> In many organisations, QM is working in close collaboration with the QM customer representatives of the organisation. In the QM conferences, many tools and methods, which are related to relationships with the external customers, have been presented.
	<b>External suppliers:</b> The Israeli QM community has developed a significant set of methods which address the way the organisation can work with the supplier toward systematically improving their products and services. This subject was covered in several presentations and workshops.
	<b>Shareholders</b> The author does not have enough information on this IC asset.
	<b>Society / community:</b> In recent years, ISQ added the society/corporate citizenship to its vision. In several organisations QM (alongside HR) led some of the initiatives in this area. In recent conferences there was an emphasis on related issues, such as "Quality of Life".
	<b>External requirement:</b> This ISO standards certification captured much attention in all the quality conferences (in recent years the attention was focused on ISO9000:2000 and ISO 14,000). A significant portion of the QM activities in many organisations is centred on the ISO certification process, and the number of certified ISO9000 companies in Israel is growing. The author extrapolates from the case of TechCom with which he is familiar, and suggests that for the QM community the external pressure by customers to "get" ISO9000 strengthens the influence of the community. It generates opportunities to introduce QM concepts, otherwise difficult to get attention for.
<b>Organisation</b>	<b>Technological infrastructure</b> the technological infrastructure of QM, which covers information systems and testing systems, is very good. This assessment is based on learning about the infrastructures of several organisations through industrial visits. Moreover, in all QM conferences there are always several presentations as well as several exhibition booths dedicated to showing advancements in infrastructure. Moreover, the motto of the 2000 conference was "Quality by Technology".
	<b>Processes, methods and tools:</b> the Israeli QM community has over the years developed a large toolkit of method processes covering many aspects of product and quality improvement. Moreover, they excel in implementing such tools in a systematic way. This is the single most popular theme in the national QM conferences.
	<b>Management processes:</b> the QM community has developed several methods and tools that relate to management activities. For example, Performance Measurement Systems and Management Reviews. However, the author concludes from "small-talks" at the coffee breaks of the QM conferences that the fact that such systems have been developed does not mean that they are implemented by the typical management team...
	<b>Organisational structure:</b> In all of the organisations the author is familiar with, the organisational structure of the QM community has been adopted in the last years to changing needs, and has gone from a central function to a decentralised one. In most, this means a small central unit, which acts as a "Knowledge Centre" and decentralised small QM departments in each Strategic Business Unit (e.g. TechCom, HiDef, HIAERO, Sciotech). This structure solves the problem of a large central QM unit, which is detached "from the field". The reason that this asset is not scored as excellent is that most QM managers the author spoke to complain that QM is not represented in the top management team. This was a repeating theme in the Focus Group workshops in the conference.
	<b>Organisational memory:</b> the QM professionals are leading the practice of "after action reviews" which are a way of learning from past success and failures, and are a concrete example of managing the organisational memory. The presentations and workshops, in which methods and actual implementation were presented, captured relatively high interest (in the Quality 99 conference, there was overbooking for the two After Action Review workshops).
	<b>Data and information:</b> QM professionals are leading the effort to help managers in better "managing by facts". In some organisations (e.g. TechCom) the first Data Warehouse applications were in the area of quality. The subject captures considerable interest, and is



	usually presented in the “KM tracks” in quality conferences.
	<b>Internal relationships:</b> QM professionals are promoting the value of “Internal customer-supplier relationships” and this subject was presented heavily in conferences several years ago (when TQM was flourishing). However, this item is not scored high since there is a divide between the QM professionals and the line employees and managers (as the author observed at his company as well as from conversations with other QM managers and the relatively small amount of non-QM professionals in the Quality conferences).
<b>Renewal and development</b>	<b>New product development:</b> the QM community is investing efforts in developing new tools and methods which are aimed at helping their organisations improve performance in many areas. In the Quality 99 conference, many non-commercial tools were presented in the Knowledge Café booths as well as in the formal sessions, and commercial tools were presented in the exhibition section. However, this item has not scored high since the community failed in many cases to market their new products to their internal customers, which led to limited use.
	<b>Strategic thinking and Reengineering:</b> As mentioned earlier in this table, the author is aware of several organisations in which the QM function has reengineered itself in order to modify its mode of operation to the changing needs of the organisations. This was the case with several Israeli Hi-Tech organisations such as HiDef , ISI, Sciotech and TechCom. However, the Israel Quality Society itself lagged behind and has not reengineered its operation in a significant way in the last decade.
	<b>Challenge / opportunity:</b> While some QM programs are continuously updating their programs to address the most critical needs of the organisation, others are still focusing efforts on less strategic issues (e.g. Manufacturing Quality).
	<b>Learning:</b> Here, like in many other areas, the picture is mixed. Some parts of the community try to be at the “state of the Art” of the QM profession, and learn and promote new approaches such as Six Sigma. Others are less open to changes, and focus on the “good old quality tools”. However, the impressive participation in the National Quality conferences (which are among the largest professional conferences in Israel) shows that many QM professionals are interested in expanding their knowledge.

Table 11-2: IC Map: Israeli QM community

11.4.3 The Israeli KM community

11.4.3.1 Definition

In order to define the Israeli KM community, the author uses the generic definition of a KM community:

*The Israeli KM professional community is a network of formal and informal communities of professionals and organisations whose core activity is strongly grounded in the different domains of KM, and identify themselves explicitly with this discipline.*

11.4.3.2 Description of the community

Compared to the QM professional community that was outlined in the previous section, the KM community is much smaller and has no formal structures. The most defined sub-community is the group of Chief Knowledge Officers (sometimes holding titles such as “Knowledge Managers”).

The sub-communities are described in the following figure.



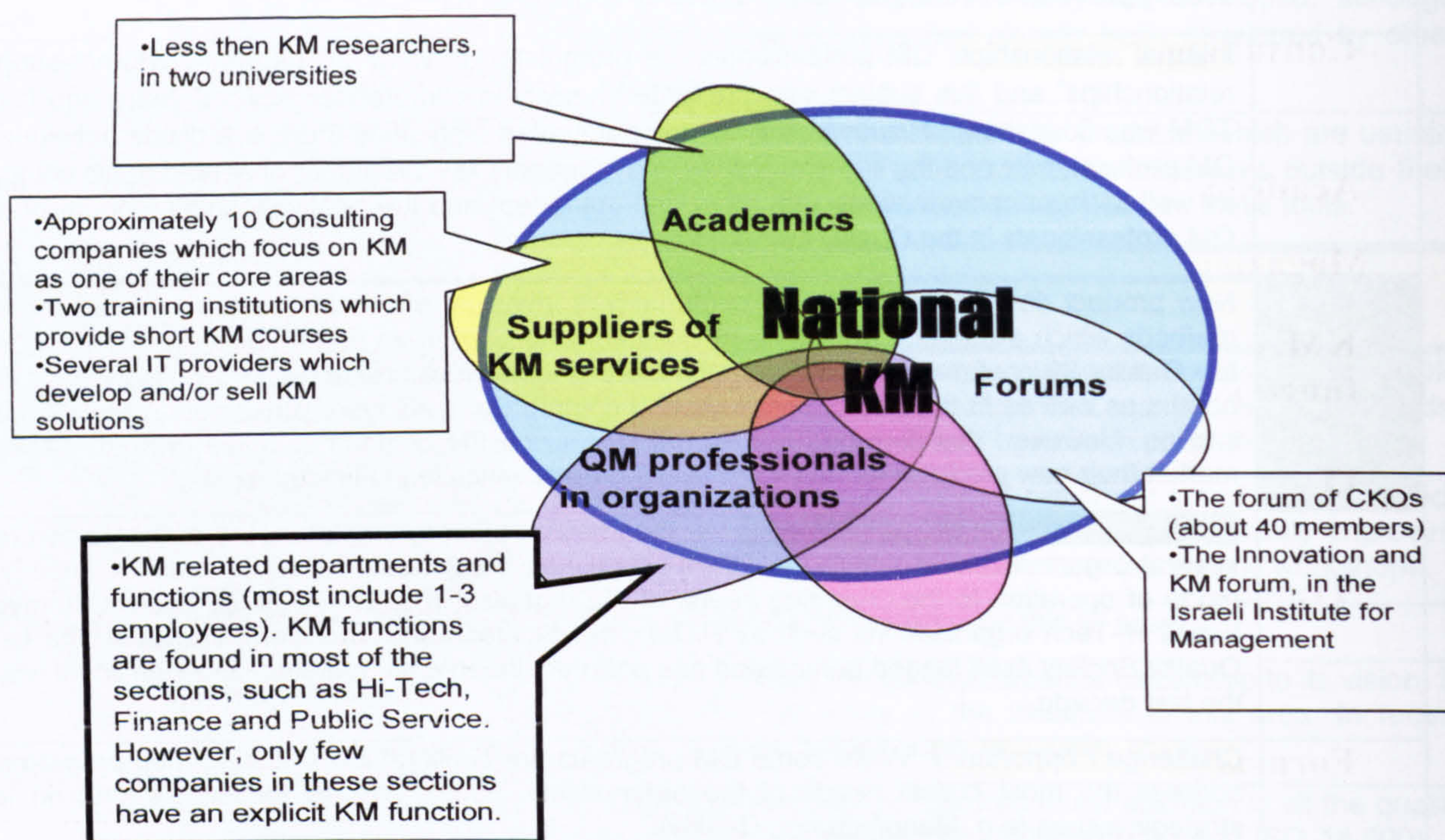


Figure 11-4: The sub-communities of the Israeli QM community

### 11.4.3.3 History

The history of the KM community in Israel started in 1995, with the first "Knowledge in Action" conference organised by Dr. Edna Pasher, which invited several world KM pioneers to expose the concept in Israel. Over the following years, the community emerged gradually, until it evolved to its current status. Today the community includes KM functions in 30-40 organisations, two short-term courses, several consultants and IT providers, and several forums of knowledge managers. The community has an annual conference, Knowledge In Action (although it shrunk in size from 300 attendees participants in the first years to 100-200 participants in the last conference). There is a monthly electronic newsletter published by one of the KM consulting companies.

The following figure shows the history of the community.



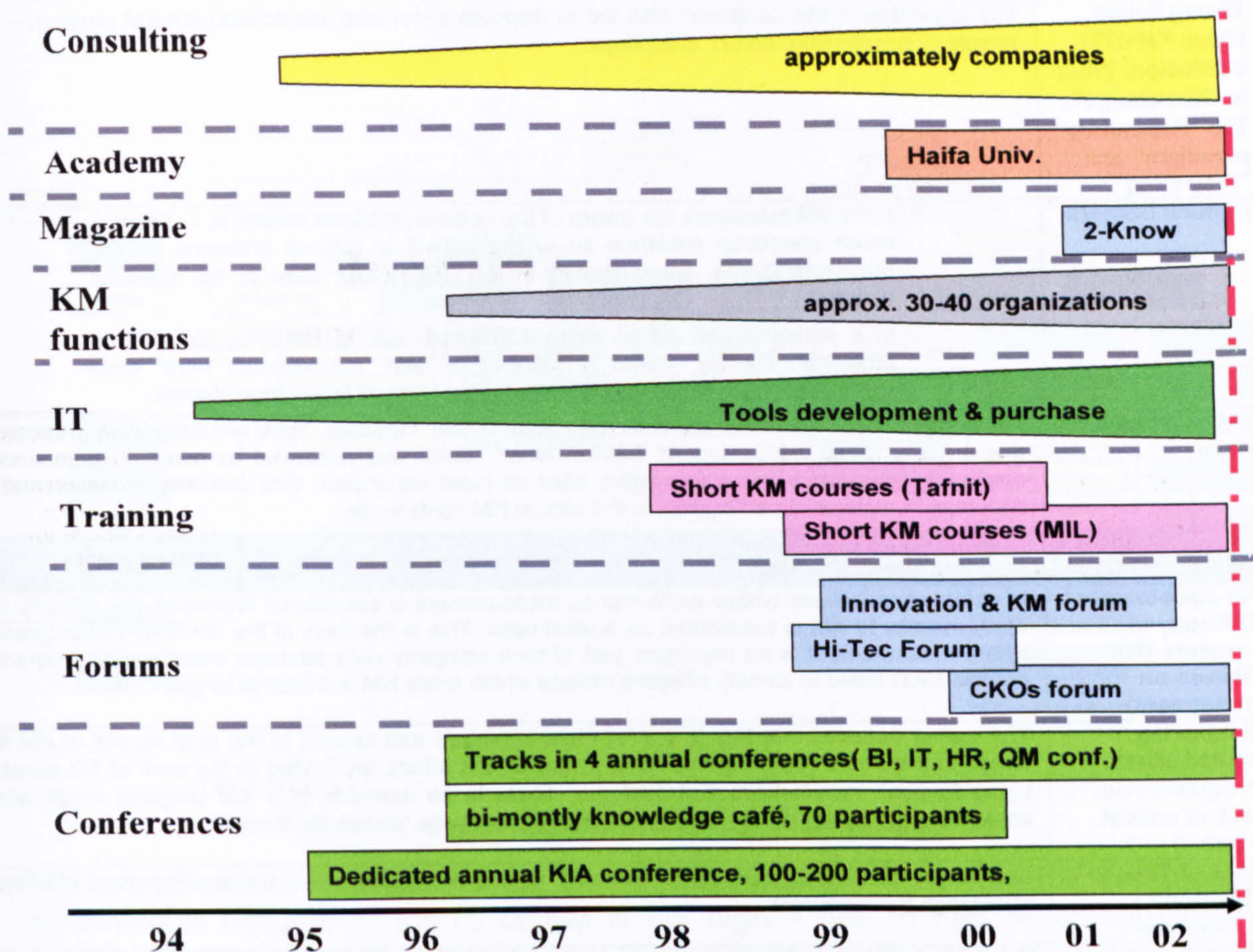


Figure 11-5: Israeli KM community timeline

#### 11.4.3.4 Problems of the Israeli KM community

The following table relates some of the community problems with the ones identified in the literature and classified into a KM problem framework. It should be noted that some of the evidence for the applicability of these challenges to the community is based partially on anecdotal evidence. Moreover, there is significant diversity between the different groups of the Israeli KM community. Thus, the table presents a typical scenario. In some areas mixed or conflicting indicators are presented.

Claims in literature	Applicability to the Israeli KM community
The expectations are very high	<p>The expectations of the few evangelists who led the KM approach in Israel are very high – they perceived that KM could provide significant competitive advantage to their organisations. This group includes both KM professionals and a few senior managers who act as their sponsor (e.g. the CEO of HiDef, the R&amp;D vice president of HIAERO, and the CTO of ECI).</p> <p><b>However</b>, the high expectations are limited to these narrow circles. Most professionals and managers in those organisations and others have no expectations from KM - they are not aware of the concept, nor of the opportunity.</p>
...and actual results are not satisfying	<p>The author found no evidence of significant beneficial outcomes from the three KM programs he was well informed of (HIAERO, ECI, HiDef) – which are considered to be among the leading ones in the country. He also came across no evidence of such benefits in other KM programs in Israel.</p>
Conceptual confusion	
Confusion: No focus and lack of clear definition Confusion:	<p>AS KM is just emerging in the country, it is still looking for its self-definition. The most apparent confusion is about whether KM should focus on IT, databases and management of explicit knowledge (actually, information) or on implicit knowledge processes.</p> <p>In several organisations this led to putting extensive attention on IT initiatives and solutions, and</p>



<b>Wrong Hands, Wrong Focus (Does KM=IT?) Confusion; What is "Knowledge", The "Repository paradigm" and "K as thing".</b>	less on non-IT solutions to KM issues. This was the case with the KM programs in TECHCOM. In this organisation this confusion also led to disputes about who should lead the KM program – IT people or people from non-IT disciplines.
<b>Cultural barriers</b>	<p>Most KM managers are aware of the cultural problems related to it. There is much anecdotal evidence as to the impact of cultural problems on KM programs (some demonstrated in the TECHCOM case in the previous chapter).</p> <p>In a survey answered by more 150 employees in HIAERO, two cultural problems, namely "power is knowledge" and "not invented here" were ranked among the four leading factors that blocked knowledge sharing.</p>
<b>KM as a Fad &amp; Hype</b>	The Israeli KM community is still in its expansion phase. However, there are some early indicators that it might follow the destiny of TQM in Israel, which was perceived by many managers and employees alike as a fad a few years after its rapid expansion. One indicator is the dramatic decrease in number of participants in the annual KM conference.
<b>Implementation problems</b>	
<b>No measurement Difficulty to measure ROI (Return on Investment)</b>	In some organisations where performance measurement is considered important, the difficulty to apply metrics to KM is considered as a weakness. This is the case of the HIAERO KM program, where measurement is an important part of their company wide strategic improvement program, and the CKO failed to identify effective metrics which relate KM activities to tangible results.
<b>Bottom Up, limited efforts programs and lack of critical mass</b>	The author believes that this is one of most important root causes to the poor results of KM in Israel. In the entire KM programs he is aware of, the efforts are limited to the work of 1-3 people trying to push nice-to-have KM systems. There is no example of a KM program which was implemented, in a significant way and in critical processes, across the company.
<b>Lack of Time to "Manage" Knowledge</b>	In a survey conducted in HIAERO, this was ranked high in the list of major stoppers of effective knowledge management.
<b>Young discipline, no scientific basis &amp; lack of experience</b>	<p>This was apparent when the author acted as a CKO, and many newly appointed CKOs from other organisations came to visit him and asking for advice on "how to begin", "what to do", "where can we get information" etc.</p> <p>Three years later, the author believes, based on conversations with people in the field and following virtual discussions forums on KM, that the lack of theory, tools, expertise and experts in the area has not been resolved.</p>
<b>Attention Management</b>	The poor attention, which most managers put into long term process improvement in general, is also reflected in the low priority they put on KM, as opposed to "fire fighting".
<b>Lack of Sustainability</b>	The author witnessed or is informed about many KM initiatives, which last only for a short time – typically 1-2 years. For example, in HIAERO many initiatives failed – a best practice database, a document management system, some of the Communities of Practice.

Table 11-3: The problems of the Israeli KM community

### 11.4.3.5 ICs of the KM community

Based on the knowledge of the author and two maps of the Israeli KM community drawn in the expert interviews phase, the author suggests the following map:



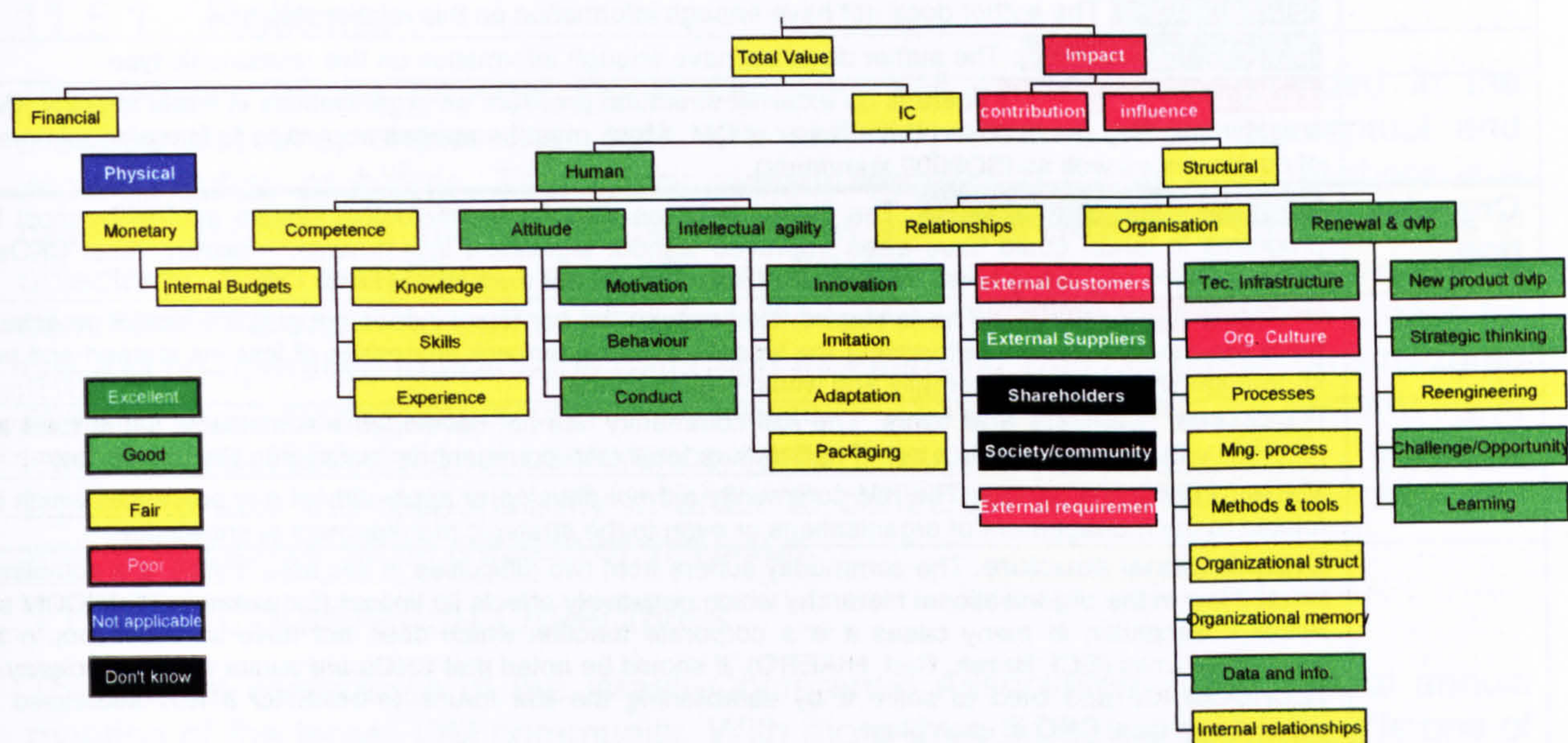


Figure 11-6: IC map for the Israeli KM Community

The overall picture is similar to the one of the general map of the KM community presented in Chapter 8: the IC of KM is not high – due to Fair Structural Capital which harm the process of turning its Good Human Capital into value. This might explain the poor impact and contribution of this community.

The following table explains the logic behind the scores:

Human	
Competence	<p><b>Knowledge:</b> As the discipline is emerging, and most KM professionals are not experienced, their knowledge of the related tools and methods, as well of the theory behind KM is limited. All of them have gone through very limited amounts of formal training, usually KM courses in the range of 40-80 hours.</p> <p><b>Skills:</b> The skills required from a knowledge manager are demanding and diverse (Davenport, 1994). The author believes, based on his close co-operation with many Israeli CKOs that only few posses all these skills. For example, most are not skilled in change management.</p> <p><b>Experience:</b> Most KM professionals are experts in other areas (e.g. R&amp;D or IT), and found the issue interesting and joined the community. However, most are not experienced in the particular approach and tools of KM. There are very few knowledge professionals in Israel who “have done it” and can share their experience with others.</p>
Attitude	<p><b>Motivation:</b> KM people are usually professionals in other areas who “discovered” KM and took it as an opportunity to make a personal career change as well as a difference to the organisation. This observation is based on long term contacts with many CKOs (e.g. CKOs of Rad, HiDef , HIAERO and Bezek).</p> <p><b>Behaviour:</b> The author could not provide a score for this item, as he was not aware enough of the behind-the- scene situation in organisations other then his.</p>
Intellectual agility	<p><b>Innovation:</b> The KM professionals are usually innovative people, who dare to start in their organisation a new area of activity. The author visited several organisations who initiated KM programs, and learned new tools and methods in each, which were usually developed or significantly developed in the organisation (e.g. Knowledge Centres in EIOp, Knowledge Fairs in Elipt, Leaders /Followers program in HIAERO etc.).</p> <p><b>Imitation and adaptation:</b> The author witnessed cases (including in his own company) in which KM has been “re-inventing the wheel” instead of reusing existing tools (although they are promoting a culture of “reuse” in every presentation). This happened in the cases of IT tools and non-IT methods.</p> <p><b>Packaging:</b> KM people are not very good at packaging their innovative products – and this can be judged by the low level of usage which the author saw in TECHCOM as well as HIAERO and other organisations.</p>
Structural	
Relationships	<p><b>External customers:</b> KM programs in Israel are hardly addressing external customers, although KM people are aware that customers are one of the better sources of knowledge. This score is based on</p>



	observing KM programs in several organisations.
	<b>External suppliers:</b> KM is working closely with their suppliers – the author witnessed several pairs of CKO/Consultant that work in close co-operation to their mutual benefit and learning (e.g. HIAERO/Pasher, Rad/Nihulin, Bezek/Katz, Unit in IDF/KLab).
	<b>Shareholders:</b> The author does not have enough information on this relationship type.
	<b>Society / community:</b> The author does not have enough information on this relationship type.
	<b>External requirement:</b> There is no external structural pressure on organisations in Israel to apply KM in a systematic way (as opposed to the case of QM, which must be applied according to formal requirements of customers as well as ISO9000 standards).
<b>Organisa tion</b>	<b>Technological infrastructure:</b> The author believes that the technological system applied by most KM programs in Israel could have been improved without significant investments. However, most CKOs in Israel are only beginning to realise that the Technology is not the bottleneck for KM.
	<b>Organisational culture:</b> This is scored low because the community does not practice what it preaches – there are many cases of “reinventing the wheel”, avoiding sincere processes of lessons learned and poor knowledge sharing, both internally and within organisations.
	<b>Processes, methods and tools:</b> The KM community has not developed a sustainable set of tools and methods – its toolkit includes a set of half-mature tools (see comment on “packaging Capital” above).
	<b>Management processes:</b> The KM community did not develop or apply almost any processes which are related to the management of organisations or even to the strategic management of knowledge.
	<b>Organisational structure:</b> The community suffers from two difficulties in this area: Firstly, it is sometimes located low in the organisational hierarchy which negatively affects its impact (for example TECHCOM and Bezek,). Secondly, in many cases it is a corporate function which does not have ambassadors in the operational units (ECI, Bezek, Rad, HIAERO). It should be noted that CKOs are aware of this deficiency. In TECHCOM KM and tried to solve it by establishing the KM forum. In HIAERO it was addressed by appointing a local CKO in each plant. The KM community as a whole did not develop formal organisation such an association, which could have promoted its activities.
	<b>Organisational memory:</b> This was ranked low, the KM community should excel in managing its own organisational memory as well as in helping others to manage the organisational memories of all critical areas in the company. The author believes that neither occurred.
	<b>Data and information:</b> The community is involved in many activities that are related to information management or even data management. In all organisations, which run a KM program familiar to the author, it helps to establish a document management systems, data warehouses, sophisticated search mechanisms etc. (comment: perhaps there is too much focus on data and explicit information, at the expense of attention to implicit knowledge).
	<b>Internal relationships:</b> The KM community is in many cases detached from its “internal customers” – this was apparent in all KM programs the author was familiar with (HIAERO, TechCom, HiDef ).
<b>Renewal and develop ment</b>	<b>New product development:</b> The KM community in Israel have developed many “products”. However, only few were implemented in a significant way in Israeli organisations. Moreover, the author is not aware of KM products which have been exported outside the country – the one exception was KLab which developed and exported, for a short period, a comprehensive Knowledge “Services Exchange system (but even this company did not make enough sales and was closed down in 2002).
	<b>Strategic thinking:</b> Out of the four KM programs, the author is familiar with, three started with a comprehensive strategic plan and only one ignored the need to have a strategic plan in addition to local activities.
	<b>Re-engineering:</b> Although KM programs have failed so far to achieve significant results, the community has not gone through an effort to rethink and reengineer its mode of operation.
	<b>Challenge / opportunity:</b> This is perhaps the strongest asset of the community. In the Israeli Economy (as well as in Economies of other developed countries) knowledge plays a major role and is perhaps the most important asset. This became evident in the late 90's when the Economy flourished due to the success of the Hi-Tech industry. This factor is put boldly in the call for paper for the quality conference, presented later in this chapter.
	<b>Learning:</b> There is a significant amount of learning between the members of the KM communities for example, many industrial visits and monthly meeting of the CKOs forum. It was not scored higher because the scope of learning of KM from other professions (e.g. QM, Finance or HR) is limited.

Table 11-4: IC Map: Israeli KM community



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## 11.5 The Quality Conference

### 11.5.1 Rational

The analysis of the national Israeli QM and KM communities, provided in the previous sections, shows that both are suffering from multiple conceptual and implementation problems. The author already showed in Chapter 5 that there is a case for co-operative interactions between KM and QM, based on commonalities in objectives and paradigms, as well as different strengths and weaknesses in commentary areas. The author already felt intuitively in 1999 that there is a case for QM/KM co-operative interactions (although this thinking was not based on structured analysis or on supporting evidence for literature). Therefore, when the opportunity to lead the QM 1999 national conference came through in February 1999, the author agreed to take the responsibility in order to contribute to QM/KM co-operation, as well as to explore some aspects of this issue.

### 11.5.2 Conference Objectives

The annual conference of the Israeli Conference Association is the central annual meeting of the Israeli QM community. With more than 2,000 participants, it is one of the largest events of this area in the world, possibly second only to the annual conference of the American Quality Association, which attracts some 5,000 participants. It has several objectives:

- To increase the awareness of the public to Quality. During the conference week, the conference attracts the public media who publish selected issues and information from the conference, usually "scopes".
- To put selected issues on the national public agenda e.g. The National Cost of Poor Quality or the quality approaches to reducing car accidents.
- To enable QM people to publish and celebrate their achievements, through papers and lectures.
- To expose the QM community members to new tools, methods and approaches, through lectures and services and product exhibitions. Professional training workshops the day before the conference provides deeper learning.
- To invite the QM people to meet and learn from each other, share ideas, and establish relationships
- And to serve as revenue sources for the quality association, to support its operations.

**In 1999, the organisers of the conference had an additional objective on top of the regular ones.**

The objective was to contribute to the renewal of the QM community by exposing it to the opportunities of QM/KM co-operation. It was explicitly addressed in the invitation letter written and published by the conference chair and program manager<sup>21</sup>:

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<sup>21</sup> *Sent to all members of the quality association, and published in its newsletter. Translated from Hebrew by the author.*



*Dear Colleagues,*

I am honoured to invite you to participate in the 5<sup>th</sup> national conference of the Israeli Quality Association, which will take place in Haifa in November 1999. The conference's theme - Quality and Knowledge - is the key to excellence in the 21<sup>st</sup> century.

The quality world always integrated within itself many elements that are related to the management of organisational knowledge. In most areas, knowledge became the most important source. In modern organisations, methods for effective management of organisational knowledge, such as feedback loops, lessons learned, learning from competitors and customers, storage and use of the organisational experience and transformation of data into information, knowledge and decision, are added to the traditional control methods.

However, this change in the quality world is slow, fragmented and random. There is a need for a step change and systematic and holistic implementation.

In parallel to the changes in the quality world, in the 90:s we see the development of the Knowledge Management discipline - the systematic handling of knowledge in the organisation - the creation, documentation, storage, sharing and use of it.

Now it is the right time to integrate the knowledge management methodologies and tools into the quality activity. This will significantly strengthen the impact of quality on achieving the objectives of organisations.

The "people of the book" have unique values of learning and knowledge expansion while retaining the historical continuum on the one hand and renewing itself on the other hand. This is true for on both the personal and national level. The integration of knowledge and quality will contribute to the development and leveraging of this advantage.

In this spirit, the Israeli Quality Association decided to promote the integrated and effective use of quality and knowledge tools, in order to progress excellence in all areas. We are sure that it will contribute to the performance, results, competitiveness and success of the Israeli economy and society.

Therefore, this year we decided to focus the quality conference under the motto: Quality by Knowledge. Sincerely Yours,

Itzhak Dana, Conference Chair

*Figure 11-7: Conference Announcement letter*



# 11.5.3 Timeline

The life cycle of the conference is described in the following figure. The author decided to extend it to the annual conference that followed the 1999 conference, in order to check the long-term impact of the conference on the QM and KM communities.

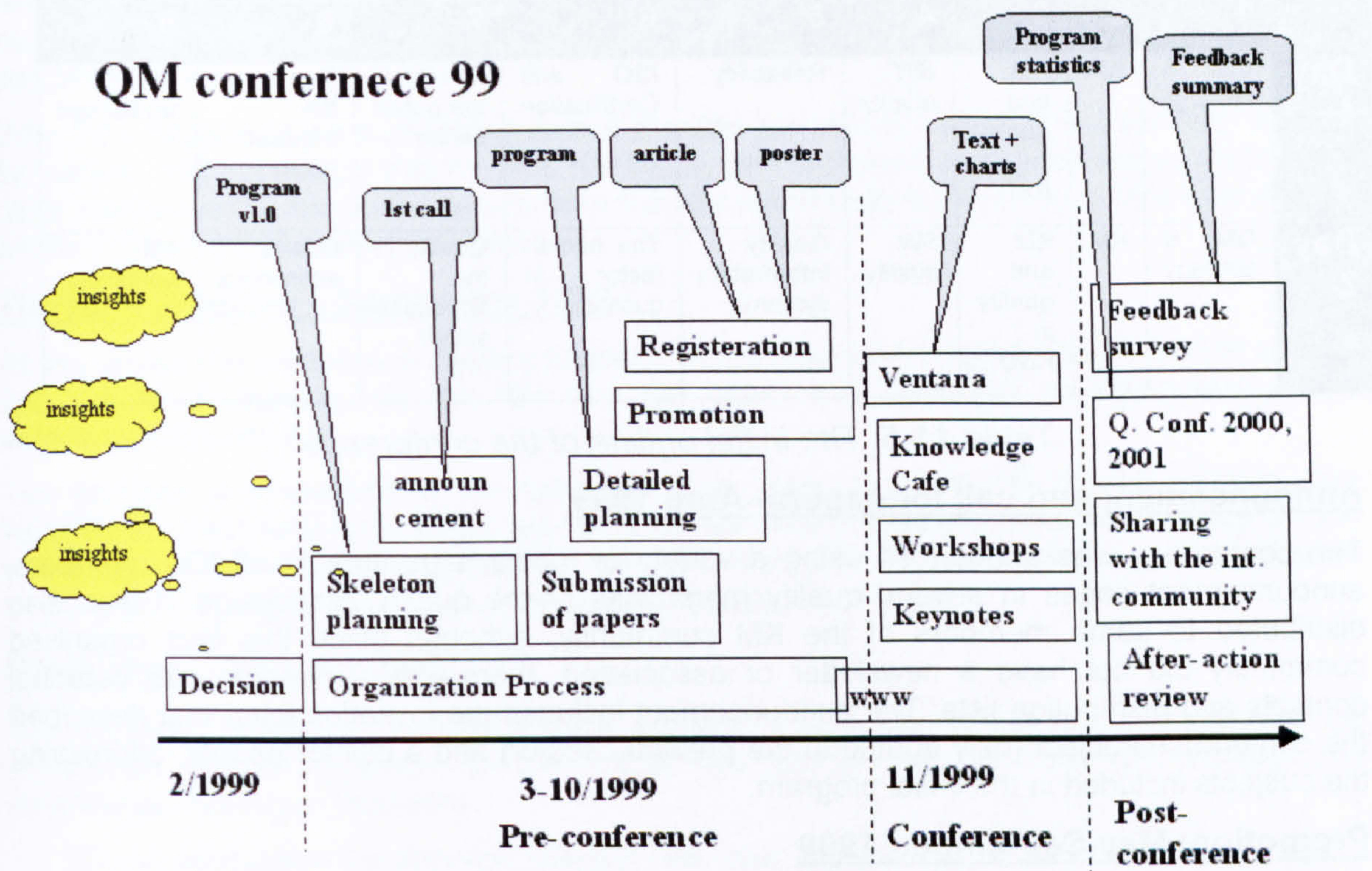


Figure 11-8: Quality conference 1999 timeline

Here the author looks at each phase or milestone – from the QM/KM interaction perspective.

## Decision Phase – February 1999

As described in the epilogue to this chapter, the idea to focus the conference on KM/QM interactions was shared by the QM and KM managers of the Industrial organisation, who agreed to lead the conference.

The president of IQA thought of it as an “interesting direction” for the conference. The IQA board, when asked to approve this decision, agreed as well, but without demonstrating any enthusiasm.

## Steering committee – March – December 1999

The conference chair set-up the steering team in March 1999. 75% of its members had been the “regular players” in the previous quality conferences and QM community, and 25% were new-comers. The KM community was represented by the CKO of TECHCOM and by Dr. Edna Pasher, who was the pioneer of KM in Israel, and in the past was involved in TQM consulting. The steering committee met on a monthly basis. Most steering team members had the same approach of the IQA board – they did not really buy into the conference vision, and focused on promoting in the conference program the tried and tested QM methods and issues covered in previous years.

## Initial program planning – March 1999

The conference chair and program leader shaped the initial two-day conference program outline, it comprised of 9 parallel tracks. They decided to focus 3 tracks on KM and KM/QM, and the rest on “ordinary” QM issues, e.g. SW quality assurance, certifications and reliability.



This balanced approach was based on analysis of the conference “customers” (attendees and presenters for the community) needs and areas of interest. The initial program outline is presented in the following table:

	Track								
	1	2	3	4	5	6	7	8	9
Day 1	QM & strategy	KM	KM and quality in R&D	SW quality	Reliability	ISO and Certification	Quality in the public sector	Quality in the medical sector	KM workshops
Day 2	QM & strategy	KM	KM and quality in R&D	SW quality	Quality information systems	The human factor in quality	Quality in the education sector	Quality economics	KM workshops

Table 11-5: The initial outline of the conference

**Announcement and call for papers- April 1999**

The conference was announced using a variety of media, e.g. letter to all IQA members, announcement pages in several quality magazines of the quality association. It was also distributed to some members of the KM community, although since this less organised community did not have a newsletter or association, there was a need to use personal contacts and distribution lists. The announcement included the invitation letter that described the conference subject (fully quoted in the previous sector) and a call for papers, addressing the subjects included in the initial program.

**Promotion: May-September 1999**



Figure 11-9: Quality 99 poster

The objective of the promotion efforts was to encourage and increase registration to the conference, to attract the attention of the public media, to recruit exhibitors for the conference’s exhibition, and to recruit financial sponsorships for the conference.

An illustrated poster, that was intended to capture the unique focus and spirit of the conference, was used as a central part of the promotion efforts. The conference hired a PR company to take care of the handling of the public media.

The results were very good – a record number of people registered<sup>22</sup>, and significant sponsorships was acquired from 12 organisations. The organisers found that it was relatively easy to attract sponsorships to activities which were regarded as innovative, e.g. the Ventana workshop, the Knowledge Cafe, the intranet site, the yellow pages etc.

Many organisations hired booths at the exhibition – all of the service providers in the area of QM.

22 All pervious conferences took place in either Tel Aviv or Jerusalem, both in the centre of the country. Therefore the steering committee was worried that the location of the conference in the north of the country, at Haifa, would lead to fewer participants. This did not happen.



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### **Submission of papers- June-August 1999**

The call for papers attracted a large number of papers – about 330. It is the policy of the IQA to make every effort to avoid paper rejection. Therefore there was a need to invite some of the submitters to present their paper as a “poster” and not a formal presentation.

The majority of the papers addressed the traditional issues of the quality world, and only a few addressed the KM and KM/QM area. This was a surprise to the organisers, and they needed to personally contact people they knew in the QM or KM communities and invite specific KM papers.

Why did it happen? One explanation is that the QM community, when presented with the call for papers, had not bought into the new KM focus, and remained in their traditional areas. The other explanation – the professionals from the KM community did not find it very attractive to present their work at a QM conference.

### **The final program – September 1999**

At this phase the conference leaders finalised the conference program, based on the papers and activities suggested by the QM and KM community members or specifically invited selected professionals.

The program is presented in the following table, where explicit KM related sessions are highlighted (each session's length was 90 minutes, and it included 3-4 presentations or one workshop). It was decided to have both specific KM tracks and also KM sessions embedded in “normal” QM tracks. The program is analysed in section 11.5.4.

### **Packaging – October 2002**

The conference leaders decided to walk-the-talk – in a conference focused on KM, the knowledge transfer channels of the conference content should also communicate the conference message. Therefore:

- ☐ An interactive Conference Internet site was announced, as a way to encourage knowledge sharing between conference participants before, during and after the event. All paper abstracts and the conference program were presented at the site, which encouraged pre-conference virtual discussions with the presenters.
- ☐ The papers were packaged in a CD and not in the ordinary thick conference book.
- ☐ All publications, e.g. the conference program book, were carefully designed with a lot of graphics and illustrations.

### **The conference – 24<sup>th</sup> and 25<sup>th</sup> November 2002**

1,950 professionals participated in the conference, most of them for its duration, and 20% for one day. The program, special activities and logistics all worked smoothly as planned, and the participants seemed to be satisfied (statistical data in a following section). Even the weather was co-operative and contributed two sunny days.

### **The conference and the media –November December 1999**

The conference attracted about 20 news items, in the radio, national and local Television, professionals and national newspapers.

The conference program manager tried to disseminate the vision of the conference in a more serious way. He told the conference story at the leading Israeli management journal (Dvir, 2000). Moreover, he shared the vision and the story with the American Quality Community using the Quality Progress magazine as the media (Dvir, 2000).



11.5.4 Analysis of the program

The final program is presented in the following table, and the sessions that are explicitly focused on KM or KM/QM interactions are highlighted.

The program was composed of 5 groups' of activities:






<p>Opening session with:</p> <ul style="list-style-type: none"><li>❑ Opening speech by IQA president: the national cost of poor quality.</li><li>❑ The minister of industry: quality as a national challenge</li><li>❑ Keynote by the chief of police</li><li>❑ Keynote by the conference chair: QM and KM go together, since the days of the bible..</li><li>❑ Keynote by the program leader: invitation to the knowledge fair.</li></ul>	
<p>Presentations-based sessions: usually 3 presentations in each 90 minute session. Altogether there have been about 150 presentations. The next section analyses their distribution alongside the QM/KM dimension.</p>	
<p>Workshops: interactive workshops and seminars. The highlight was the Knowledge by Music workshop, in which it took 90 minutes to turn the participants into a good jazz company and demonstrate how tacit knowledge flows.</p>	
<p>Computer Aided Focus Groups: Five sequential sessions that discusses the future of QM. This activity is described in details in chapter 9.</p>	
<p>Knowledge fair: happening of many knowledge sharing activities:</p> <ul style="list-style-type: none"><li>○ Round-table with presenters</li><li>○ Demonstrations of best-practices form industry</li><li>○ Hyde park on quality issues</li><li>○ Knowledge-café</li><li>○ Posters sessions</li><li>○ Access to the Yellow-pages</li></ul>	

Table 11-6: Group of activities (illustrations form the conference's poster

The organising committee made an effort to reduce the share of presentation-based sessions, and increase the share of more interactive sessions. They thought that interactive sessions were much better then presentations as a way to transfer and share knowledge, and in a “Quality by Knowledge” conference, this principle needs to be implemented in the program. Indeed, the share of presentations-based session decreased in comparison to the previous conferences.



09:30-12:00		Opening Session		QM & KM tools		Standards		Public sector		Education		Human factor				Ventana		Knowledge fair	
Track		Strategy	R&D	QM & KM tools		Standards		Public sector		Education		Human factor				Ventana		Knowledge fair	
13:00-14:30		From QM to KM – natural evolution	KM in R&D	Learning from after-action reviews		ISO 9000, 2000 Edition – what's new		The national quality award in the public sector 1998		Knowledge, Quality and Education 1		The human factor and quality knowledge				Ventana workshop 1		On-going activities	
14:45-16:15		Panel: the quality manager in the 21 <sup>st</sup> century	Performance Measurement in R&D	Quality of knowledge – the push/pull question		Quality in action - The impact of quality on the organisation		Models of results measurement		Knowledge, Quality and Education 2		The quality of the organisational communication				Ventana workshop 2		On-going activities	
16:45-18:15		QM & KM in start-ups	Implementation of methodologies in R&D processes	Lessons learned and after-action review workshop		TL9000 – new quality standard for telecom sector		Leadership, measurable objectives and improvement		Knowledge, Quality and Education 3		Quality in marine transportation				Ventana workshop 3		On-going activities	
Track		Strategy	R&D	QM & KM tools		Standards		SW		Service		Quality medicine		Miscellaneous				Knowledge fair	
09:15-10:45		The quality of knowledge in M&A	Reuse of knowledge in R&D	New perspective on QM tools (1)		QM & KM in purchasing processes		Methods and tools for SW QM		CRM		Quality in medicine –		workshop: Knowledge by music		Ventana workshop 4		On-going activities	
11:15-12:45		QM in the 21 <sup>st</sup> century: evolution or revolution	Interfaces: Marketing – R&D – Production	The Intellectual Capital Balance		The computerisation of QM in the next millennium		Improvement of SW development processes		Learning form customers		Risk management		In-house development of quality tools		Ventana workshop 5		On-going activities	
14:30-16:00		From strategy to knowledge measurement	TOC seminar	New perspective on QM tools (2)		ISO14000 and EMS		SW testing		Workshop –the role of the service manager		Quality of medicine in the community		Quality in Haifa university				On-going activities	
16:30-18:00		Management of knowledge assets		after-action review workshop		ISO as learning tool in financial organisation		SW quality in start-up companies		Quality in service organisations		Quality and clinical measurements		Workshop Balances score cards:				On-going activities	

Table 11-7: The conference program



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## **Analysis of the program**

34 out of the 67 quality conference sessions directly addressed KM (these are the highlighted sessions, in the table above). They can be grouped into several categories:

- Sessions about KM (e.g. KM in R&D and Intellectual Capital). Close examinations of the presentations in this group show that they are directly relevant also to the QM community.
- Sessions about methods that were traditionally considered as QM tools were adopted by KM and are now promoted by this community. The After Action Reviews workshops, or the “quality tools-new perspective” session are an example of this group.
- Sessions that question the traditional roles of QM and explore KM as one of the new directions of QM. The Ventana workshop or “QM in the 21 century” panel, for example, belong to this category.
- Sessions that designed to expose the QM community to the KM approach through interactive Knowledge experiences, The Knowledge Fair sessions and the Ventana workshop served this purpose.

What about the other 33 sessions?

An examination of the papers in the non-highlighted sessions reveals an interesting feature – some of them are addressing KM issues. For example, what do the papers in the “learning from customers” (Service track) talk about? It is about capturing knowledge from interactions with customers, sharing knowledge with the customers – and extracting value (quality of service and much more) out of it.

### **11.5.5 After action review – 23 December 1999**

Four weeks after the conference, the steering committee met for the last time – to conclude the conference. The committee used three information sources:

The results feedback forms, filled during the conference by 87 attendees; about 15 feedback letters sent after the conference to IQA, And the impressions of the committee members.

The conclusions at the end of the review were:

**The program was interesting and relevant to its customers** – the statistics of the number of participants in each session are satisfactory for most sessions and subjects. According to data from the survey (N=87):

- 95% agreed that “*the conference addressed issues which are important to you*”.
- The “level of interest” and “innovativeness” of all 60 sessions were scored. 5 of the top 10 innovative sessions, and 6 of the top 10 interesting sessions were KM related.
- The program was rated high (3.50 on 1-4 scale). See the following chart:



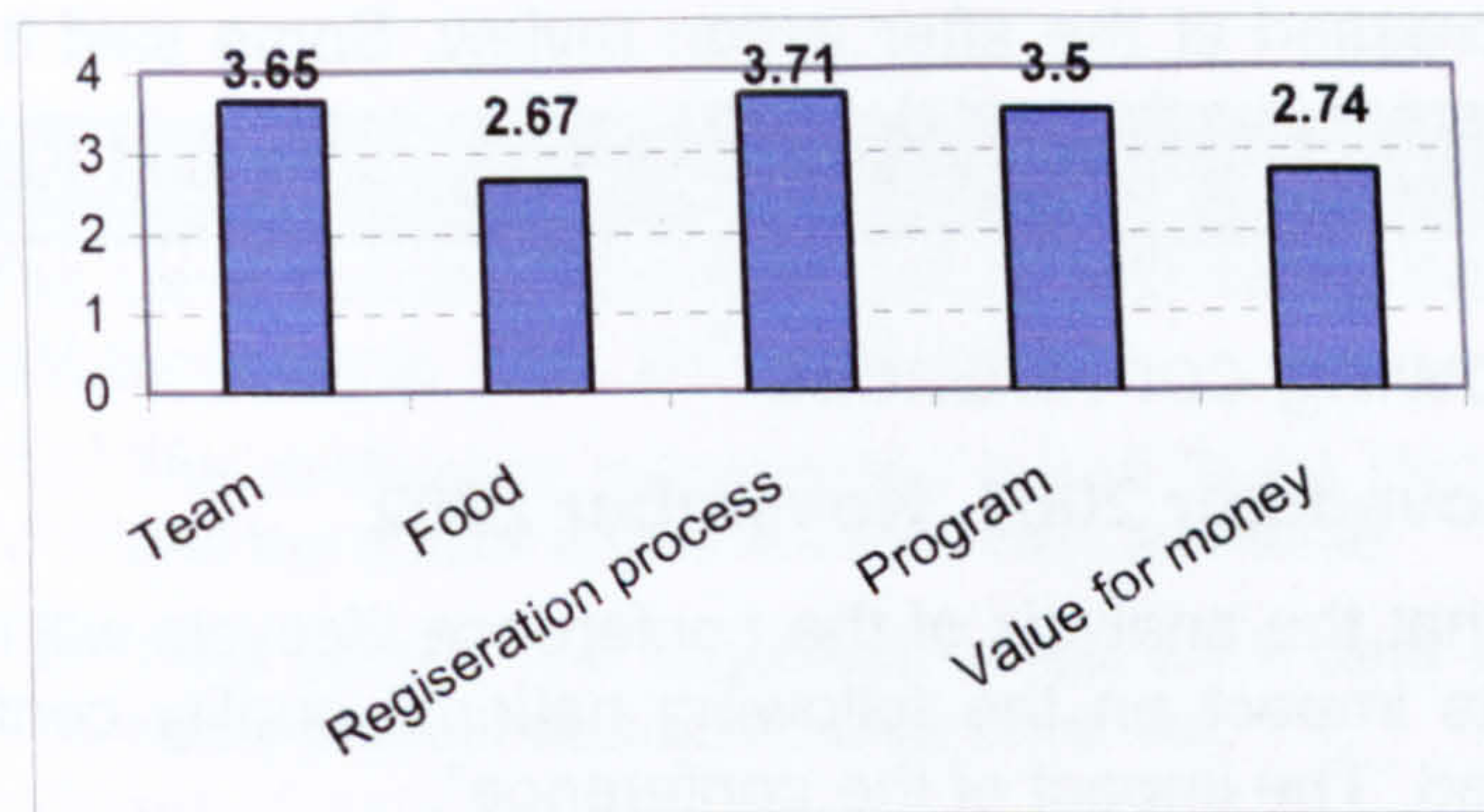


Figure 11-10: - attendees' satisfaction survey - summary of results

A quote from a letter from the president of IQC, the institute for quality and control: *"Flowers to the organisers of the conference, for organising a high-quality, innovative, creative and friendly conference. It manages to deliver to its attendees significant professional contribution"*

**The conference was very unique and innovative** – many feedback providers mentioned this. This refers to both the content and the packaging and unique activities (see also quotes in the next section).

**KM and QM**: most feedback letters, or forms or comments at the after-action-review comments did not refer directly to the decision to focus on "Quality by Knowledge".

There is an interesting comment from a QM VP of a large defence organisation: *"The conference theme 'Quality by Knowledge' was strongly highlighted in the subjects of sessions, panels and workshops. The organisers need to examine with it brought many additional participants from the knowledge management sector, who usually don't participate in the quality conferences"*.

From a letter from the head of the Israel Standards Institute: *"...the conference was creative, fruitful and enriched the QM community in the update technology and methodology of quality and knowledge management"*.

**Weaknesses** – most complaints referred to the over-crowded conference rooms in many of the sessions. Some problems were experienced at the queues for coffee and dining room. This failure in logistics is also a sign of the conference success – not only more-than-expected people registered for the conference, the rate of actual participation even in the usually problematic first and last sessions<sup>23</sup> were very high.

**The overall conclusion** – the conference was successful. There are several indicators for the conference success:

- The results of the conference attendees' satisfaction survey.
- Letters from QM members to the conference organisers and IQA management.
- The high rate of registration, and the high-level of participation in most activities.
- The large amount of sponsorships and exhibitions recruited for the conference – which demonstrates the level of interest in industry.

<sup>23</sup> Most participants needed to drive early in their morning to Haifa to arrive in time to participate in the first session, or would arrive home relatively late after participation in the last session.



- The opinions expressed at the after action review. Some said it was the best national QM conference in the last decade.

### 11.5.6 The following conferences:

#### **November 2000, November 2001, November 2002**

The author believes that the analysis of the conference lifecycle will not be complete without referring to its impact on the following national quality conference. This is covered in section titled "The impact of the conference".

### 11.5.7 The impact of the conference

The objective of the conference, as stated by its chair in the announcement letter presented above, was clear:

Did the conference impact the Israeli QM and KM communities according to that vision?

The author does not have any direct data that can be used to answer this question. However, the author suggests an examination of several issues which can serve as indicators:

- Did the next QM conference put more emphasis on KM?
- Did KM conferences mirror the QM conference and host QM issues/people?
- Did the criteria list of the National Quality Award change?
- Have ISO9000 auditors put more emphasis on KM?
- Have KM and QM worked together in joint projects?
- Have there been publications about KM in QM publications, and vice-versa?
- Did QM people cross the lines, and join the KM community?

The following table provides the observations of the author regarding each indicator:



Indicator	Observation	Conclusion
<b>The following QM conferences</b>	<p>The same scenario happened before and during the national QM conferences 2000, 2001 and 2002.</p> <ul style="list-style-type: none"> <li>○ The conference management asked Itzhak Dana and the author to join the steering committee.</li> <li>○ They agreed and organised a KM track (one of many parallel tracks in the conference).</li> <li>○ The “call for paper” specified KM as one of the subjects, but yield few papers in the area.</li> <li>○ The track organisers contacted people from the KM community and invited papers.</li> <li>○ During the conference, there was good interest and participation in the KM tracks (usually similar numbers as in the other tracks).</li> </ul>	<b>Some impact was observed</b>
<b>The following KM conferences</b>	<p>Reviewing the agenda of the 2000, 2001 and 2002 “knowledge in action” conferences, the central KM event in Israel, shows that the QM issue or methods was not added to the conference agenda or focus areas. The noticeable shift is toward more focus on Innovation, as the “2<sup>nd</sup> generation of KM”.</p>	<b>No impact was observed</b>
<b>Quality Award criteria</b>	<p>The annual quality award is managed by the IQA, and based on the criteria of the American Baldrige Award. Analysing the criteria lists of 2001 and 2002 does not reveal any new criteria which is oriented toward KM.</p>	<b>No impact was observed</b>
<b>ISO9000 audits</b>	<p>ISO9000 is the most common quality certification in Israel. The auditors base the audits on the international standard, but the interpretation and the issues they emphasise are influenced by the QM approach held by the Israeli QM community (and more specifically, by the Israeli Standards Institute) at the time. The author interviewed, in 2002, several auditors, and concludes that they do not have a new focus on KM (most auditors participated in the 1999 QM conference).</p>	<b>No impact was observed</b>
<b>Joint projects</b>	<p>The author is not aware of any Israeli Organisation that has strong interactions and co-operation between KM and QM. The case of TECHCOM is unique in this sense.</p>	<b>No impact was observed</b>
<b>Publications in KM &amp; QM communication channels</b>	<p>The author scanned the main Israeli QM Magazine (Quality Link), the internet site of IQA and Israel Standards Institute – and found very little reference to KM. The same observation is valid in the other direction: there is no dedicated KM magazine, but there are several virtual communication sources: dedicated sites and newsletters. The conclusion: there is no reference to QM.</p>	<b>No impact was observed</b>
<b>QM people become KM professionals</b>	<p>HIAERO started a large-scale KM program in 2001. Out of the KM mangers of the 13 SBUs, none came from the QM discipline.</p> <p>In HiDef , the opposite happened. The KM program that was managed by the QM organisation until 2000 was transferred to the responsibility of the R&amp;D department.</p>	<b>No impact was observed</b>

Table 11-8: Impact of the conference



The author concludes that in a **timeframe of three years** after the conference, the interactions between KM and QM did not become tighter than before the 1999 conference. The conference did not create a significant impact on the directions of the QM and KM communities and their interactions.

11.5.8 A Balance of Expectations and Results

Did the conference meet the expectations of its organisers and customers? The balance is based on both quantitative indicators (when available) and qualitative judgements of the author.

Legend:

Significantly bellow expectations	Within/ slightly bellow expectations	Beyond expectations
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	Parameter	Expectations/ planning	Actual results
General information	# of participants	1500	Approx 2000
	% of new participants (1 <sup>st</sup> time in the QM conference)	25-30%	22%
	Financial results (profits contributed to IQA budget)	+10,000\$	+50,000\$
	Attendance levels at lectures & workshops.	70-80	110 in average in each session
	Participants satisfaction (feedback forms, scale 1-4)	High	Program: 3.5 (1-4) Overall: 3.45
	Satisfaction of the IQA management (according to letters and after-action-review discussion)	High	Very high
The vision: KM & QM/KM focus	% of KM oriented activities	30%	50%
	# of participants from KM community	20-30	Very few
	Reference to the conference KM/QM vision, in the public and professional media	High	20+ references, most referred to other issues
	# of special interactive KM activities, new to QM community and conference	"Many"	9 new types (some listed in the following lines)
Actual implementation of Knowledge fair activities	Round tables	5 tables x 10 participants	1X 12
	Yellow pages: # of registered experts	80-100	50
	Participation in Ventana	7 sessions X 20 participants in each	7 X 15
	Interest in implementing Ventana in own organisation	NA (this benefit was not planned)	15 contacts initiated
	# of posters/ interactions per poster	40 posters 5-10 interactions	50 posters 5-10 interactions
	# of knowledge sharing best practices stands	8	6
	Hyde park events	2-3 speakers	0
Lasting Impact (analysed in the previous section)	Impact on following QM conferences	High	
	Impact on following KM conferences	High	
	Impact on audits and Quality Award	High	
	Joint KM/QM projects	High	
	Km papers in QM media and vice-versa	High	
	QM people join the KM community	High	

Table 11-9: Quality 1999: Expected & Actual results



The table reveals a “multi-coloured” balance.

The conference was very successful, from the perspective of its customers –both the participants and the Israeli Quality Association.

However, the conference leaders have achieved only some of their objectives. It was successful in putting the vision of KM/QM interactions very strongly on the conference agenda. More than half of the presentations or activities in the conference referred to this issue.<sup>24</sup> The author believes that at least during the conference and the preparation month that preceded it, the KM and KM/QM co-operation vision was included in the agenda of some parts of the QM community. However, this was not the case with the KM community who sent papers to the conference only after specific invitations from the organisers and very few of its members registered for the conference.

However, this was a short-term success – and according to all indicators its impact did not last throughout subsequent years.

## 11.6 QM/KM interactions

### 11.6.1 Interaction Patterns

Here the author revisits the QM/KM interaction patterns found in the literature and defined in Chapter 5. As clearly demonstrated in the following table, many of those patterns, sometimes even conflicting ones, are present in the Israeli QM/KM case, and in particular in the Quality 99 case.

Interactions patterns	Interactions patterns in the Israeli QM/KM communities
Ignorance	<p>YES: this is the most common pattern:</p> <p>QM ignores KM: Apart from the authors' efforts to introduce KM to QM, there are little similar initiatives in the national community. The response of QM people for the “call for papers” for the KM track in the QM conferences is lower then in the case of the other tracks. This results in a large proportion of invited presenters.</p> <p>It is interesting to note that even within the QM conference steering committee, KM remained “the baby” of the author and another person, and most other members completely ignored the issue.</p> <p>KM ignores QM: In the quality conferences, there have been very few attendees from the KM community even in the KM tracks (mostly only the invited lecturers in these tracks).</p>
Convergence	NO. The author is not aware of any case in which QM and KM converged.
Take over	YES. The author is informed of two cases in which the QM community took over the KM area. There was no case in which KM took over QM.
Emergence	YES. KM emerged from QM in at least two organisations (TECHCOM and HIDEF ). However, in most Israeli organisations KM emerged from

<sup>24</sup> The conference leaders did not consider as a failure the fact that some of the innovative interactive KM related activities in the “Knowledge Fair” were not successful. They were planned as prototypes, and it was expected that only some would attract good participation. What was disappointing was that even the successful ones were not implemented in the conferences of subsequent years.



	other professional disciplines, most notably from Information Technology.
Confrontation	YES. The author witnessed several discussions in which QM was referred to by KM professionals as "old fashion obsessed with procedures", and in others where KM was referred to as a "Fad" (e.g. in the Ventana workshops in the conference).
Overlapping	YES. In several organisations both KM and QM (e.g. ECI, HIAERO and HIDEF ) deal with issues like Best Practices, separately.
Replacement	NO evidence for such pattern.
Fading away	YES: some members of the QM community estimate that it will fade away, as "Quality will become the responsibility of everyone". Several similar statements were documented in the Ventana workshops in the conference (the Group Interviews). As KM is a very young discipline, the author is not aware of similar opinions discussed in the KM community.
Co-operation I: Learning	YES (but not significantly): in the 1999 conference, the participation level in the KM track was high, which indicates that QM professionals are interested in the subject and possibly came to learn about KM tools. However, the level of interest in learning from KM is not very high - QM people's participation in KM conferences is very low compared to what could have been expected. The author believes that learning in the other direction is rarer – for example very few KM professionals participate as attendees in the QM conferences – even those who are invited to lecture usually did not stay to attend other presentations.
Co-operation II: Support	YES (but not significantly): In the 1999 conference, several KM supported the conference by organising presentations in activities in the Knowledge Café. Some examples of support in TECHCOM were described in the previous chapter.
Co-operation III: joint efforts	YES (but not significantly): there a few examples of such co-operation modes, e.g. in the case of the "Hi-Tech Reuse Forum" in which several KM and QM people (and additional professionals from other disciplines) worked together to promote methods for better reuse in R&D. Some examples of joint efforts in TECHCOM were described in the previous chapter.
Co-operation IV: holistic approach	YES (but not significantly): the author is informed of the case of HIAERO, where all support communities (including QM, KM and Corporate Strategy) are working together in the framework of the company wide improvement program launched in 2001.

*Table 11-10: QM/KM interactions patterns at ECI*

**Comment:**

The table above shows that all co-operation patterns have been realised in the Israeli QM/KM communities' case. However, it should be noted that all of the co-operation patterns have not been significant, were limited in scope and did not become the most common pattern, which is still "Ignorance".



## 11.7 IC flows between QM and KM

### 11.7.1 Identification of potential flows

Based on data from the conference and the gaps identified in the IC maps, the following IC flows map is suggested:

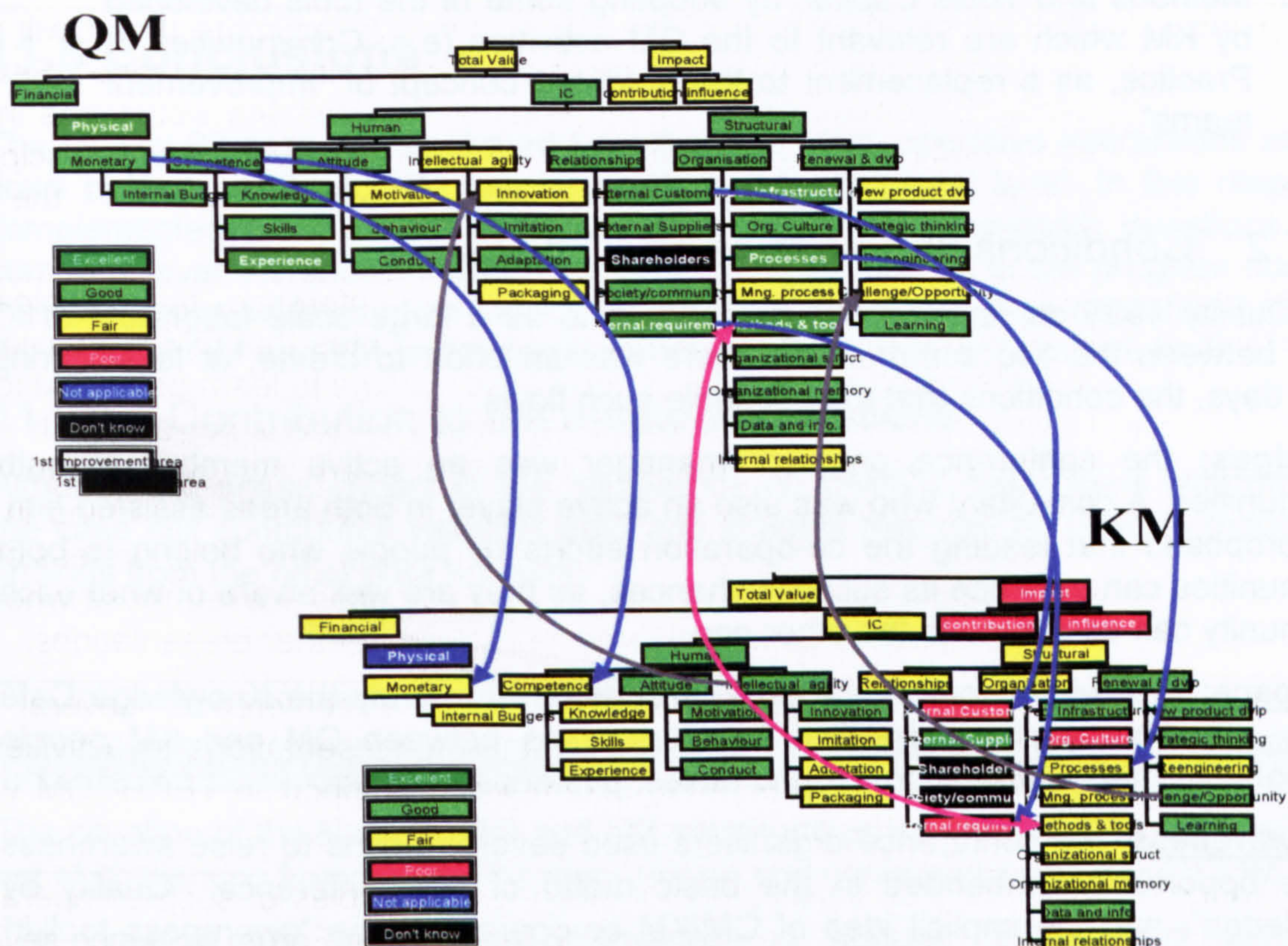


Figure 11-11: QM/KM IC flows map

Some of the means by which such flows may occur are presented in the following lists:

#### From QM to KM:

- ☐ *Processes Capital*, e.g. awards, certification programs etc. QM can help KM in establishing these structural instruments, or invite them to share them.
- ☐ *Competence Capital* (experience, skills, knowledge)
- ☐ *External Requirement Capital*, i.e. helping KM increase its influence by adding KM to the criteria of ISO9000.
- ☐ *Customer Relationships Capital*, by adding KM perspective to the activities, which are related to customers (e.g. Customer Support).
- ☐ *Financial Capital* (this is complementary of IC, but was found to be a relevant flow between QM and KM)



### From KM to QM:

- *Opportunity Capital*, i.e. enhancing the relevancy of KM by including the KM challenge in its scope. This was one of the main explicit objectives of the Quality 99 conference.
- *Innovation Capital*, by inviting innovative KM people to take part, on a one-time or continuous basis, in the activities of the QM community.
- *Methods and Tools Capital*, by adopting some of the tools developed by KM which are relevant to the QM activities (e.g. Communities of Practice, as a replacement to the outdated concept of "Improvement teams").

### 11.7.2 Conditions and enables of IC flows

The Quality 1999 conference can be referred to as a large scale laboratory of IC flows between the two communities: there was an effort to create, at least during three days, the conditions that might enable such flows.

- **Bridges:** the conference program manager was an active member of both communities. A consultant who was also an active player in both areas assisted him. It is proposed that leading the co-operation efforts by people who belong to both communities can enhance its success chances, as they are well aware of what each community can contribute to the other one.
- **Space:** The whole conference area, and more intensively the Knowledge Café space, acted as a physical space for interactions between QM and KM people (through informal conversations, round tables, posters stands etc).
- **Awareness:** the conference organisers used several means to raise awareness of the opportunity embedded in the basic motto of the conference: "Quality by Knowledge", and the implicit idea of QM/KM co-operation. The "awareness toolkit" included the conferences poster which was mailed to many QM and KM professionals before the conference, the keynote by the conference chair, an article about the subject in the magazine of the Israel Society for Quality, a news item in "Know-2", the journal of the KM community, and the "call for papers" in which the rationale of the conference theme was mentioned.
- **Think Global, Act Local:** this condition was implemented by elaborating the broad and strategic vision of QM/KM co-operation through the "awareness toolkit" described above, and a series of small activities intended to demonstrate how KM can support, or be integrated into the QM domain. The interactive activities in the Knowledge Café, as well as several presentations demonstrating QM/KM interactions in specific cases, were used towards this end.
- **Continuity:** After the 1999 conference, it was decided to continue the effort of strengthen QM/KM co-operation by having a KM track in each of the following QM conferences.
- **Exchanges:** it is suggested that uni-directional flows are less effective than bi-directional flows. However, this condition was implemented only in a minor way in the conference, when the lecturers from the KM community were encouraged to attend the whole conference and learn from it. It is also interesting to note that QM professionals were never invited to lecture in KM conferences.



As was already shown, the impact of the conference on QM/KM co-operation and IC flows was not high. Although the reason needs to be explored in depth, as proposed in the “recommendation for future research” section, the author suggests an explanation:

**In order to create significant and sustainable IC flows between the QM and KM communities the enabling conditions, which were implemented in the Quality 99 conference, need to be implemented more extensively. These cannot be implemented in a one off event (or even in an annual conference). Moreover, there might be additional enabling conditions that should be identified and implemented.**

## 11.8 Conclusions

The Quality 99 case demonstrated how the idea of co-operative interactions and IC flows between QM and KM can be applied at the national level. In this respect it complemented the TECHCOM case, which applied the research questions at a company level. As shown in the “Call for Papers” as well as in the program content, the conference addressed an explicit objective: to enhance the co-operation between the national QM and KM professional communities, in order to leverage both.

### 11.8.1 Contribution to the research questions

Although the actual impact of the conference on QM/KM interactions was modest, the case still contributes valuable data and insights that can be used to triangulate findings from the other data sources.

The following conclusions are classified according the research questions:

**Q1: Why do the QM and KM professional communities need to improve?**

The situation of the National QM and KM communities was found to be inline with the set of challenges found in the literature review and confirmed in the TECHCOM case:

The national QM professional community is mature. It has had significant achievements in improving the quality of goods and services. However, it is starting to decline, and is looking at possible ways to regain its relevancy and enhance its impact.

*“However, this change in the quality world is slow, fragmented and random. There is a need for a step change and systematic and holistic implementation” (Call for Papers, Quality 99 conference).*

The situation of the KM community is worse: it is a small emerging community, which has not yet gained sufficient critical mass to have an impact on the performance of organisations in which it operates. In most organisations which have a KM program, it is a small local initiative rather than a strategic one.

**Q2: What are the potential interactions between QM and KM professional communities?**

The mapping of the actual QM/KM interactions into the twelve interaction patterns model shows that this case corroborates the evidence found in the literature and in the TECHCOM case, which is that several interactions patterns are practised at the same time. There is a case for the realisation of the co-operative patterns, as demonstrated in the conference program, which included 30 opportunities and examples of QM/KM co-operation. In reality the co-operative patterns are hardly



realised in a significant way, and the non-co-operative patterns, and especially "Ignorance", are practised much more than the co-operative ones.

It is interesting to note that there is irregularity between the communities: QM people are much more open to interactions with KM than vice versa. However, QM people's interest is not strong enough to "push" them to significant realisation of such interactions.

**Q3: What are the Intellectual Capitals of the QM and KM professional communities?**

The top level section of the QM and KM maps show how their IC is perceived by the author, based on accumulating evidence from his activity in the two communities for many years, and the data from the conference:

QM: the overall IC is Good, due to its Good structural capital and Good human capital. The community is Excellent in the following IC capitals: competency of its members, external requirement as a driver, and organisational capital (including tools, processes and infrastructure). In contrast to the Good IC, the impact is only Fair.

KM: the IC of KM is Fair, as a result of Fair structural capital. The community is Excellent in "Opportunity" capital and Good in "Renewal" and "Agility". As in the case of QM there is a gap between IC and Impact (which is Poor).

**Q4: What are the potential flows of Intellectual Capital between the QM and KM professional communities?**

Based on data from the conference (which was an experiment in IC flows) and the gaps identified in the IC maps, the following IC flows are proposed as the most significant ones:

From QM to KM: *Processes Capital, Competence Capital, External Requirement Capital, Customer Relationships Capital, Financial Capital.*

From KM to QM: *Opportunity Capital, Innovation Capital, Methods and Tools Capital*

**Q5: What are the business implications of the flows of Intellectual Capital between the QM and KM professional communities?**

The case shows that at least some members of the national QM and KM communities see the value in IC flows between KM and QM. Several principles, which might enable QM/KM IC flows, were embedded in the conference design: "Bridges", "Exchanges", "Space", "Awareness", "Think Global, Act Local", and "Continuity".

The results were not sustainable and the conference did not create a lasting impact. The author suggests an explanation for this is the implementation's intensity, which was not high enough. In other words, the efforts to enhance QM/KM IC flows did not reach a critical mass.

**Q6: Does the IC mapping methodology show utility as an improvement tool in the context of professional communities?**

At the time of the conference, the IC mapping methodology was not yet developed. Therefore, the case provided no hard data on its utility to the national QM and KM communities. However, the leader of the QM community, namely the president of the Israel Quality Association, experienced the methodology, as he was one of the expert interviewees (Chapter 7). He suggested using the methodology in one of the association's management meetings in order to assess the IC of the QM community in general and the associations in particular. He saw it as an opportunity to reveal



and agree improvement areas. This gives an indication about possible utility of the tool.

Moreover, the author estimates that if the methodology was ready when the conference was in its planning phase; he could have used it in one of the steering team meetings. This would help to better highlight the opportunities for IC exchanges, and thus focus the conference program more directly on these opportunities.

### 11.8.2 Strengths and Weaknesses

The Quality 99 case enjoyed several strengths, which led to the decision to include it in the research program.

#### **Strengths**

- ☑ It provided insights into the research questions at the national level, thus complementing the company level TECHCOM case. It involved more than 2000 participants from all sectors of the Israeli Quality professional community.
- ☑ It provided the opportunity to investigate an explicit and direct effort to enable QM/KM IC flows, thus it acted to some extent as a laboratory of such flows.
- ☑ As a member of the steering committee and organiser of the conference program, the author had full access to all documented data on the conference. Moreover, he observed all phases of the conference life cycle.
- ☑ Although the case is focussed on one event, it also provides a historical perspective into the situation of QM and KM before the conference, and the impact of it after the conference.

#### **Several weaknesses have to be considered:**

- ☒ The case was based on a conference that differs in many ways from the real day-to-day reality of organisations.

*Countermeasure: the case was triangulated with the TECHCOM case, which refers to the day-to-day operation of the company, and with the findings from the interviews. Moreover, some of the data in this chapter comes from the knowledge of the author about the operations of the communities, and not only from the conference.*

- ☒ The author was heavily involved in the design of the conference. This might lead to personal bias in the analysis phase.

*Countermeasure: the author used some quantitative data to support the findings (e.g. the classification of program items, and results of the attendees' satisfaction survey).*

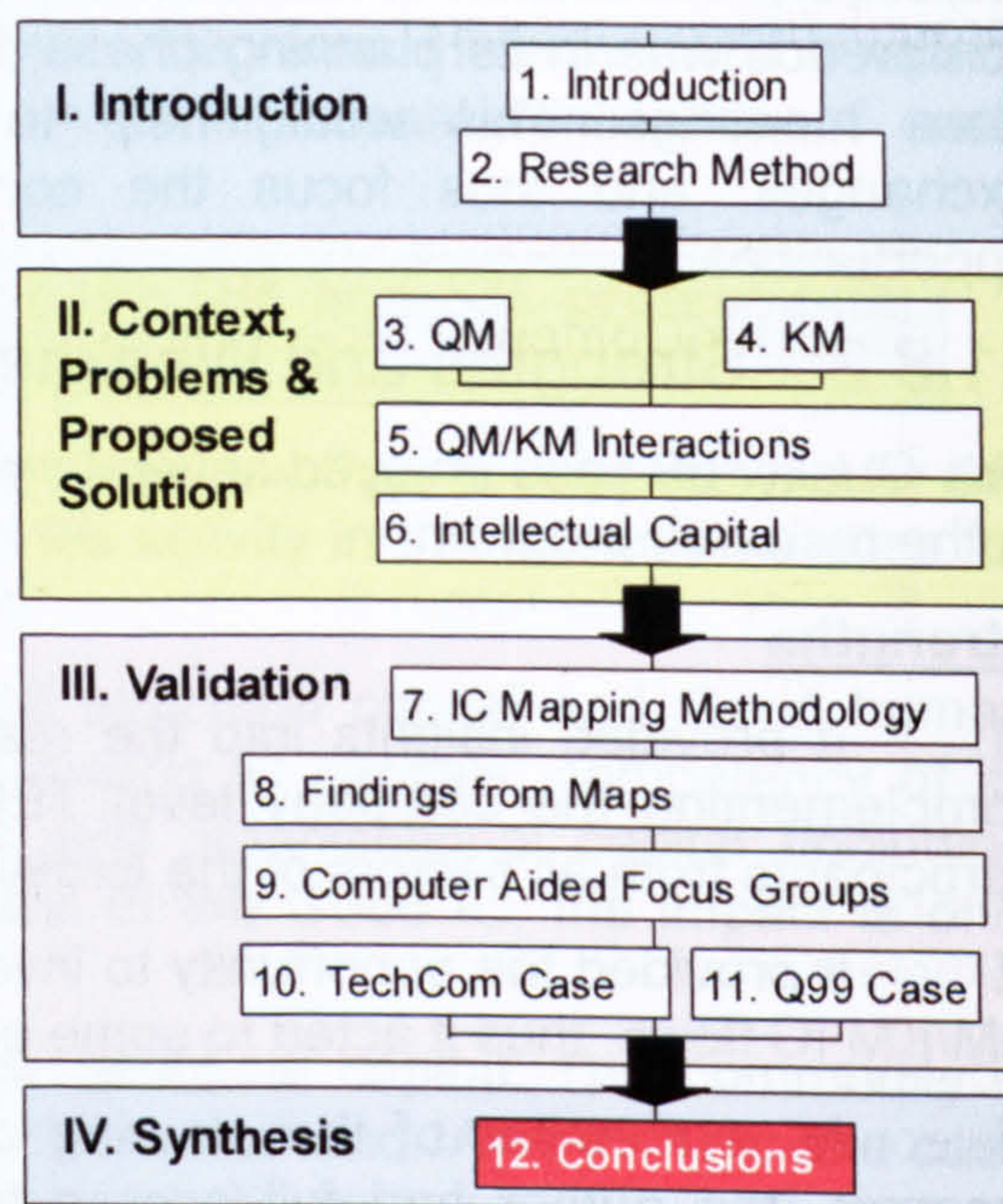


## 12 Discussion and Conclusions

### 12.1 Aims

In this chapter the author brings together the various data sources under each question and integrates them. This chapter concludes the findings of the research. It answers the following questions:

- ☐ What are the answers to the research questions?
- ☐ What is the contribution to knowledge of the research?
- ☐ What are the strengths and weaknesses of the research?
- ☐ What future research work directions emerged from the research?
- ☐ What are the business implications of the research findings?



In the opening chapter of this thesis, the author used the metaphor of the **Puzzle**, in order to visualize how the diverse pieces of his work experience served as a starting point for the research. In this concluding chapter the **Pyramid** metaphor is used to visualize how the layers of the research have been layered as a basis for reaching the final conclusions. The layers are: Literature and Raw Data, Analysis, Integration, and Conclusions



The research pyramid



## 12.2 Concluding the research questions

In this section the author integrates the findings from the various data sets obtained through the five research tools employed:

1. The literature survey (with more than 200 references).
2. The IC mapping interviews (with 14 experts)
3. Four Computer Aided Focus Groups (with 68 participants).
4. The TechCom case (based on 8 years of extensive work in both the QM and KM communities in key roles).
5. The 1999 Israel National Quality conference (with more than 2000 participants and more than 150 lectures and workshops). The data from the conference was augmented by evidence from the subsequent conferences in 2000, 2001 and 2002.

It is believed that the quality, richness and quantity of the data on each question are sufficient to arrive at conclusions.

However, some data, which suggest contradictory answers, is also presented. These dialectics demonstrates the complexity of the research question, and may augment the case for further research.

The author begins by sequentially answering each question. Then, integrates these focused conclusions into a conclusion on the overall research hypothesis.

### 12.2.1 Question 1: Why do the QM and KM professional communities need to improve?

The author confirmed that both communities are facing multiple problems, which reduce their influence in the organisation, contribution to the organisational performance, and overall impact.

While the QM community faces ageing problems and is beyond its peak, the KM community suffers from infancy symptoms and challenges, and faces an invisible barrier, which prevents it from generating a significant impact. While QM is struggling to regain its position in the area of high impact, KM is trying to arrive there.



In the following sections a more detailed description of this situation is provided.

#### **QM is ageing and beginning to outlive its usefulness**

Historically, QM has contributed significantly to the performance of organisations, most notably in the manufacturing area. It played a major role in the rise of the Japanese industry in the 60's and 70's, and the recovery of some sectors of the American industry in the 80's - for example by dramatically improving the reliability of the automotive industry products. In the 80's and early 90's there was growing management attention in QM, accompanied by considerable growth of the community. However, in recent years the community has faced several challenges:

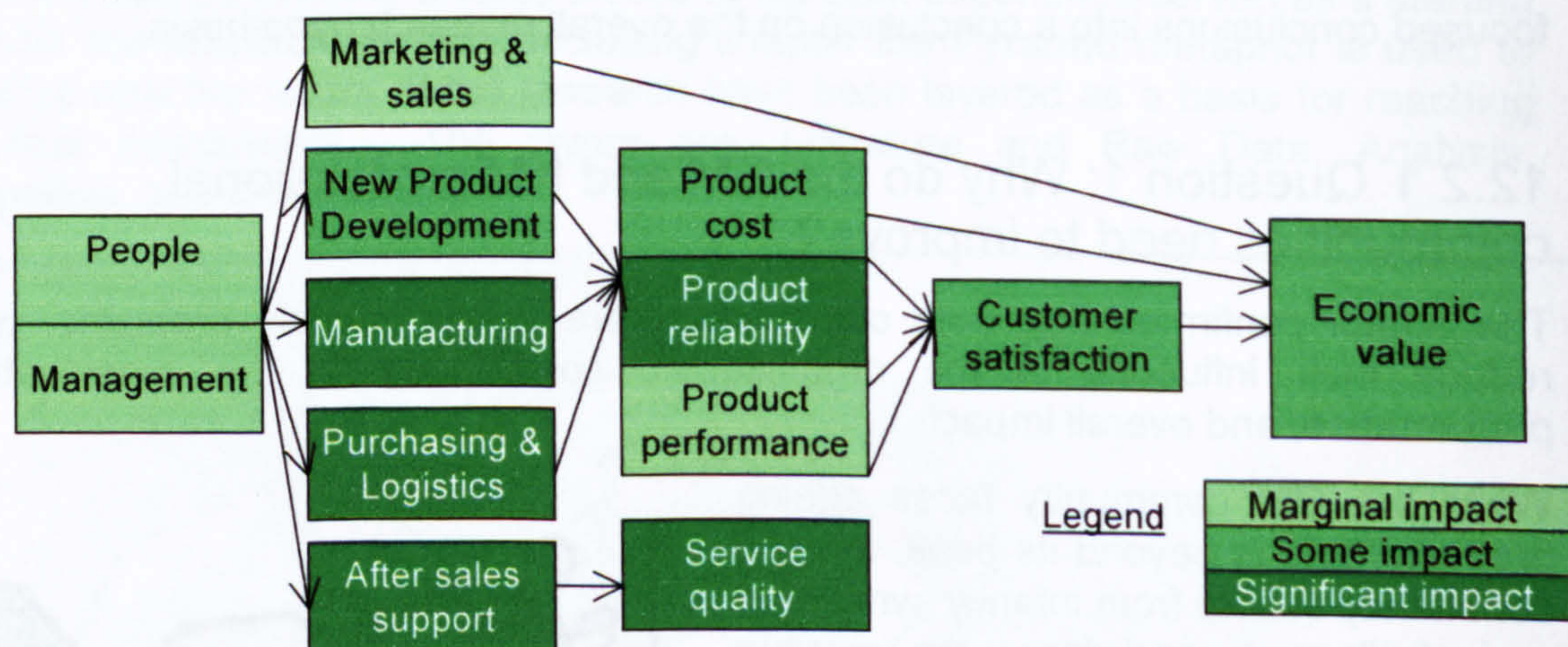
- ❑ **QM's perceived impact, contribution and influence** are not high, relative to its strengths, according to the expert interviews conducted in this research. The impact was perceived as fair ("yellow", on average), while QM's Intellectual Capital was rated as good ("green") (section 8.3). In the focus group, several QM



professionals referred to its low impact. For example, “QM is not contributing enough to the strategic goals of the organisation” (section 9.6). The literature agrees with this observation. For example, Byrne (1997) and Dalrymple (1999) claimed that QM over promised and under delivered. Suresh (2002) adds that the advantages that QM can offer are neither strategic nor sustainable.

❑ **QM is being referred to by many as a “pet rock” or “fad”** (Shaw 2002). Others describe it as a kingdom of mini-bureaucracies, focused more on mechanisms and procedures than the essence of quality. In the case of TechCom, the flagship of the TQM initiative, *The Improvement Teams*, were abolished two years after their introduction (section 10.5). Other elements of this initiative, e.g. the *Cross Company TQM Training*, were also buried in the same fad graveyard. Analysis of the program of the Quality 99 conference shows a similar phenomena in the general Israeli QM community (section 11.4).

❑ **QM was very successful and influential in the area of manufacturing.** For example. In the case of TechCom its contribution to product reliability was critical to the status of the company as certified supplier to demanding customers like British Telecom and Deutsche Telecom. However, once TechCom got the manufacturing quality right, TechCom’s QM community failed to make similar contributions to R&D and Marketing (section 10.5). One author says that the reasons for applying QM are starting to disappear (Larsen, 2001). This is clearly demonstrated in the Impacts chart of the TechCom’s QM community, shown here and explained in details in chapter 10.



❑ **There are indicators that the community is starting to shrink.** For example, in TechCom the community shrunk by 40% in the period 2001-2002 (section 10.5).

❑ **The Human Capital of the community comes of age** – this is seen in the QM IC Map (section 8.3). One of the strengths of the community is its experience. However, the downside of this is that many members are ageing and this may lead to loss of motivation, as suggested by one interview (section 8.3) and highlighted in the QM IC map. The same phenomenon is also apparent in some parts of the TechCom QM community (section 10.5) and Israeli QM community (section 11.4).

❑ **This ageing problem refers not only to the individual** community members but also to processes, tools and in general the community as a whole. One author put it in clear words: “It is the methodology of yesterday” (James 1997). Pyzdek (1999) agrees and adds that the QM community “clings to the past”.



- ❑ **Statistical evidence shows that these challenges are common to many organisations.** QM “usage” rate decreased from 72% in 1993 to 41% in 2002, with 12% annual defection rate (Rigby 2001).
- ❑ One of the interviewees illustrated this situation by saying that “**QM is trapped in a golden cage** of standards, procedures, checklists and other control tools which blocks it from perusing its real vision” (section 8.3). One of the participants of the focus groups complained that QM had become so mechanical, and added “*I heard that you can train a dog to replace a quality manager*” (section 9.5).

Some community members and academics alike suggested that the community is “ageing” and “beginning to outlive its usefulness in many ways”.

There is no single root cause for this situation. There are some scattered claims in the literature about the root causes for the challenges of QM. The author created a new model that consists of five groups of root causes, and classified them based on evidence from the literature (3.5.3) and amended this based on the data gathered from the case study. This enabled the author to provide a structured and more complete account on the situation of QM. The list of categories of root causes in this model includes:

**Conceptual problems**: control-oriented; too rational and mechanistic; ignoring the complexity of organisations; The Golden Cage of procedures and standards; Perceived as Discouraging creativity.

**Scope**: Not strategic; Stand-alone approach; Narrow focus; Too vague an approach; Not business oriented; ‘an end to itself’.

**Implementation problems**: Lack of sustainability; Piecemeal implementation; Lack of Leadership; Lack of Marketing; Lack of time and resources; Resistance at all levels; Over promising, under delivering; Controversial financial justification.

**Relevancy**: The methodology of yesterday; loss of relevance; Ageing.

**Position**: QM is a Staff Function; QM is a corporate initiative.

Some QM professionals are aware of the challenges of their community– and are exploring (and sometimes experimenting) with different ways to renew the community and help it regain its impact. This is done in all levels, for example.

- ❑ **The company level.** TechCom’s QM introduced in 1991-2000 more than 30 methods, concepts and tools that were new to the company- (10.5).
- ❑ **The national level.** The search for relevancy is demonstrated in the Israeli Quality Association case. The Quality 99 conference was a story of a community that tried to embark on a new agenda and challenge. The search of the American Quality Association in the last ten years for new challenges and directions by its Future Teams tells a similar story (Watson, 2000).

### **KM is a sick baby**

It is widely agreed by most writers on KM that “*perhaps one of most remarkable developments of our time is the ‘discovery’ that knowledge is the key, not only to economic, but also the business and corporate success*” (Nonaka and Teece, 2001). In one survey, KM was selected by 30% of the respondents as “*the most important management approach*”, and by 30% as “*a very important management approach*”.



However, the **“bottom-line” of KM** is even worse than the one of QM: its impact, influence and contribution are low – red or magenta in the IC map, as perceived by the experts interviewed. One interviewee said: *“They (the KM people) have only marginal impact on the company’s key business processes”* (8.4). There is very little evidence of organisations where KM has made a significant difference. For example, the main finding of a survey of 108 organisations agreed with the claim on low impact of KM: *“we found no correlation between systematic management of knowledge and improved bottom-line performance”* (Lucier and Torsiliery, 2001). In the TechCom case, KM had very marginal, if any, contribution to the company performance. This is why it is not a surprise that the KM community disappeared a few years after it was established (section 10.4). In the case of the Israeli KM community, the community still exists, but there is no evidence of its contribution to the performance of the organisations in which its members operate (section 11.4).

The challenge of KM is **very different** than the one of QM. While QM tries to **retain or regain** its relevancy, KM is an emerging community that is struggling, so far without great success to **make a significant difference**.

Here are some indicators of the situation of KM:

- ❑ KM is already referred to by many practitioners and academics as “the latest management fad” (Schrage, 2001). The fate of KM in TechCom was no different to the fate of TQM: both were publicised internally, a program launched, sponsors nominated, champions emerged – and both vanished (sections 10.4 and 10.5). Similarly, while the first national KM conference in Israel (Knowledge in Action 1, 1996) attracted a lot of attention and press and some 400 participants, the conferences of 2001 and 2002 attracted 100-150 participants.
- ❑ The usage level of KM is low compared to other management approaches (28%); the satisfaction level is lower than the average and defection rate higher than most other surveyed management approaches.
- ❑ Some KM communities have already disappeared – for example the TechCom KM community described in one of the case studies. There are indications of layoffs of KM professionals also in other organisations.

There are several root causes to this situation. Similarly to the root causes model developed for QM and presented above, the author classified the root cause of the KM situation into three groups (4.6):

**Conceptual confusion**: No focus, diffusion and lack of clear definition; confusion; what is “Knowledge”, the “Repository paradigm” and “K as thing”; Wrong Hands, Wrong Focus (Does KM=IT?); can knowledge be “managed”?

**Communication Barriers**: Insufficient communication; too much communication – KM as a Fad and Hype;

**Implementation problems**: No measurement, no auditing; difficulty to measure ROI; Bottom Up, limited efforts programs and lack of critical mass; Lack of Time to Manage Knowledge; young discipline, no scientific basis and lack of experience; attention management; The Field of Dreams syndrome; Lack of Sustainability; political battles;

Analysis of the TechCom KM program confirmed the list of the above root causes and weaknesses found in the literature.

Many of these weaknesses became apparent when examining the IC map of KM, as perceived by the experts interviewed. Compared to QM’s map, the overall IC of KM is generally “yellow” – that is, it was not yet successful in creating a strong community. The many “red” and “yellow” roots, which represent weaknesses in many areas of KM’s intellectual capital, explain this overall low scoring (section 8.4).



Many KM people are well aware of the problems of their community. Many are frustrated by the gap between the huge opportunity of KM and its very modest results. This is why the literature is packed with papers on “*second generation knowledge management*”, or on “*why KM program fails*” and similar titles which are good indicators for this situation (Ash, 2000; Brompton, 2000; Byrne, 1997; Lucier and Torsiliery, 1997; and Ehnbohm, 2002).

In conclusion, the answer to the first research question was based on a new structured way to organise the evidence in the literature as well as in the TechCom and Israeli QM and KM professional communities’ cases on the challenges of QM and KM. More insight is gained by positioning the two communities on a maturity lifecycle – KM is pre-mature while QM is past its peak.

### 12.2.2 Question 2: What are the potential interactions between QM and KM professional communities?

The author expected to find a significant amount of co-operation between the QM and KM professional communities. This expectation was based on four foundations that explain why such co-operation might be effective:

1. **Commonalities in the overall objectives** of QM and KM. Both are mostly support functions aimed at helping the “productive” parts of the organisation in better performing their tasks and achieving the organisational objectives. This was apparent in the QM and KM literature (sections 3.3 and 4.3 respectively), as well as from reviewing the work plans of TechCom’s QM and KM communities (sections 10.4 and 10.5 respectively).
2. **Commonalities in their basic assumptions.** For example, the triangle of culture/ processes/ technology plays an important role in both disciplines. As in the previous point, these commonalities were present in the literature and in the TechCom case.
3. **Sets of problems and challenges** that are similar include the struggle of both communities to enhance their impact. As was concluded in the previous section, both communities need leveraging, and it was suggested that co-operation between them could be part of the solution.
4. Alongside many commonalities, noticed considerable differences between the communities were noted, some of which represent **complementary strengths and weaknesses**. This was visually demonstrated in the IC gap maps (section 8.6). The author noticed many complementary strengths and weaknesses also in the TechCom case when comparing the company’s QM and KM IC maps (section 10.7.4).

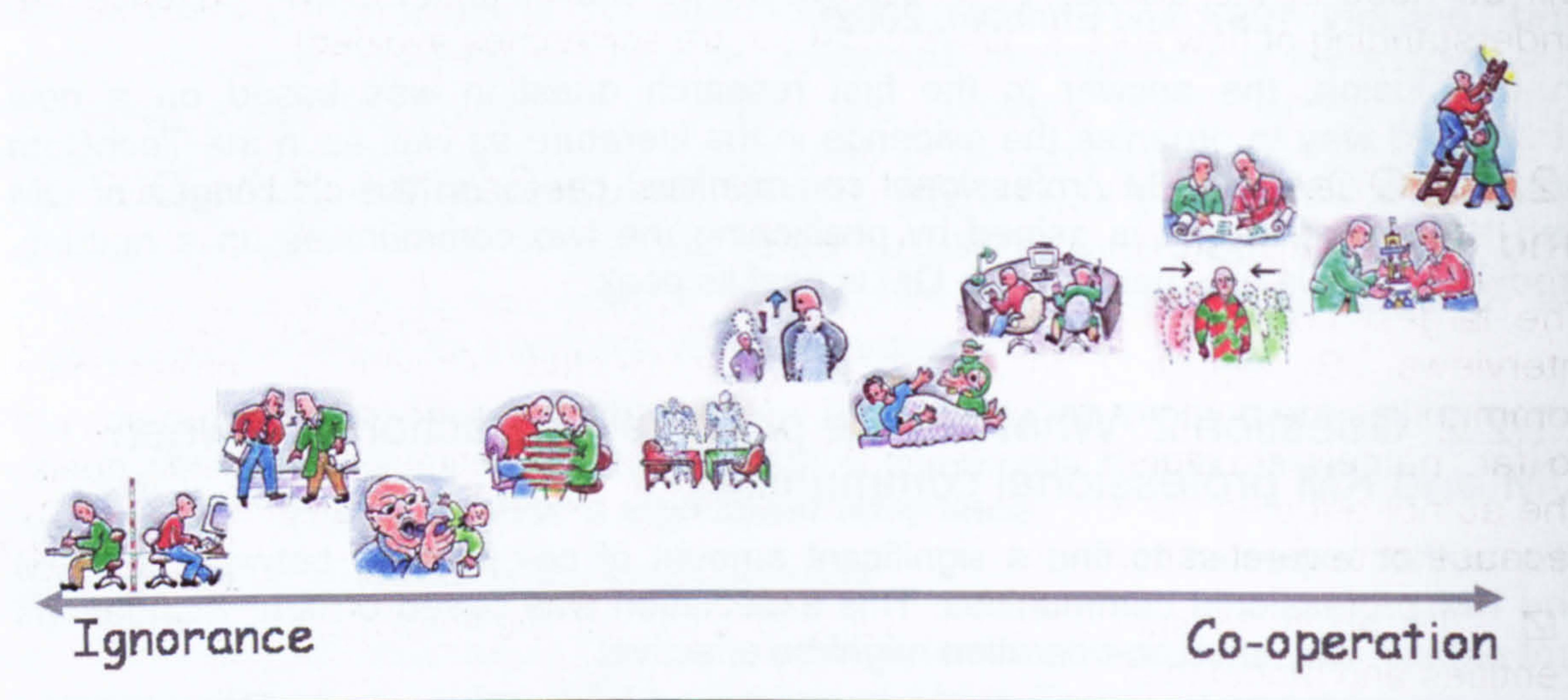


Another perspective for the case of co-operation was gained by revisiting the problems of the QM and KM professional communities, as analysed in the previous chapter. It seems that many of these problems might be addressed directly through QM/KM interactions (section 5.2.3). For example:

- QM problems e.g. *Resistance from all levels, Poor marketing, Methodology of yesterday, Stand alone, Ageing.*
- KM problems e.g. *Difficulty to measure and show ROI, Bottom up, Limited efforts, Young discipline, No experience, Lack of critical mass, Leadership, No time.*



The reality, as discovered through the literature, the interviews and the case studies, is more complex. The exploration surfaced several interaction patterns. Based on these, a new **typology of twelve different patterns of interactions**, covering the whole spectrum from mutual ignorance to full merger has been created (section 5.4).



The four patterns that were essentially co-operative (when analysed in isolation to the competitive patterns) were characterised by a **“utopian” flavour**. Professionals and academics from both communities were suggesting and talking about the logic and need for such interactions. In the literature, the suggestions of the interviewees often used statements such as **“QM and KM should...”** (Wij, 2000; Cross, 2001; Patricia, 2002; Kennet *et al.*, 1999 and Cayer, 2001). The two case studies, which describe extensive and planned efforts to bring about QM/KM co-operation pointed toward the same direction – these efforts resulted in local and short-term co-operation, but did not bring about sustainable synergetic interactions (sections 10.6 and 11.4). In the interviews the author found a similar approach of QM and KM professionals – several of them illustrated interesting co-operation patterns, as it should have been in an ideal world (section 8.7). In the Computer-Aided Focus Groups (section 9.5) it was discovered that the idea of strong linkage between QM and KM **did not appear to come naturally** to the professionals from both communities. Only after lengthier discussion on this, using different perspectives, did the idea became much more attractive to them. In fact, towards the end of each workshop KM was perceived as the most important role of the QM community.

So far the author has discussed the group of *co-operation* patterns in the typology. The other group of interactions included mutual ignorance, suspicion, confrontation, disrespect, resistance and criticism. The author has found reference to these individual interaction patterns in the literature (Barth, 2000; Duguid, 2000 and Drucker, 2002) as well as in the TechCom case in a non-aggressive way (8.6.2); but no framework to organise the many individual interaction patterns was found in the literature.

To conclude, although there is a **perceived case for strong co-operation** between QM and KM, in most cases the **opportunity for synergetic interactions is not realised**. Another relevant finding is that having a professional that belongs to both communities increased the probability that an attempt to create QM/KM co-operation would take place. It was found that in several cases such an individual acted as a bridge between the communities.

**Contradictory opinions:** in the literature, interviews, case studies and especially focus groups (section 9.7.3) a few voices that explicitly objected to the idea of QM/KM co-operation were found. Several arguments were articulated: KM need not



enter the QM bureaucratic trap; QM needs to retain its focus and avoid the temptation to increase its scope by adding KM; there is nothing common between QM and KM.

Note: the conclusions about the different interaction patterns between QM and KM will be used in the discussion on IC flows. The twelve patterns can enhance the understanding of how such IC flows occur (or are sometimes avoided).

### 12.2.3 Question 3: What are the Intellectual Capitals of the QM and KM professional communities?

The largest body of data that answers this question came from the IC mapping interviews. By applying the concept of Intellectual Capital to professional communities the author extended the territory in which this concept has been applied so far, namely structured organisations, nations and sometimes, even, individuals. The author adopted the IC concept and developed a new tool to assess and map ICs because of several capabilities:

- ☑ Its ability to support a structured analysis of the intangible assets of entities and model them.
- ☑ Its ability to highlight weaknesses (which point towards specific challenges to address) and strengths (which point to potential exchanges of such assets).
- ☑ Its ability to support easy yet deep understanding, explanation and communication of ideas and perceptions on intangible assets, which are otherwise abstract.

The experience of the author, the findings from the literature survey and the case studies were reviewed and seen to support most of the conclusions from the IC maps. In some cases, the IC map findings did not seem to comply with what the author was expecting. **It took a deeper analysis** to understand and usually agree with the logic behind the collective intelligence of 14 expert interviewers, as captured by the maps. Thus, the research provided some propositions on the IC of QM and KM that are perhaps different to the intuitive or commonly held opinion on them. For example the author proposed, based on the findings of the IC maps, that the overall intellectual Capital of QM is much higher than the one of KM, or that there is a significant gap between the IC and Actual Impact of both communities.

#### ICs of QM

As a background for the discussion on the IC of QM, the IC map, already presented in section 8.3 is shown again.



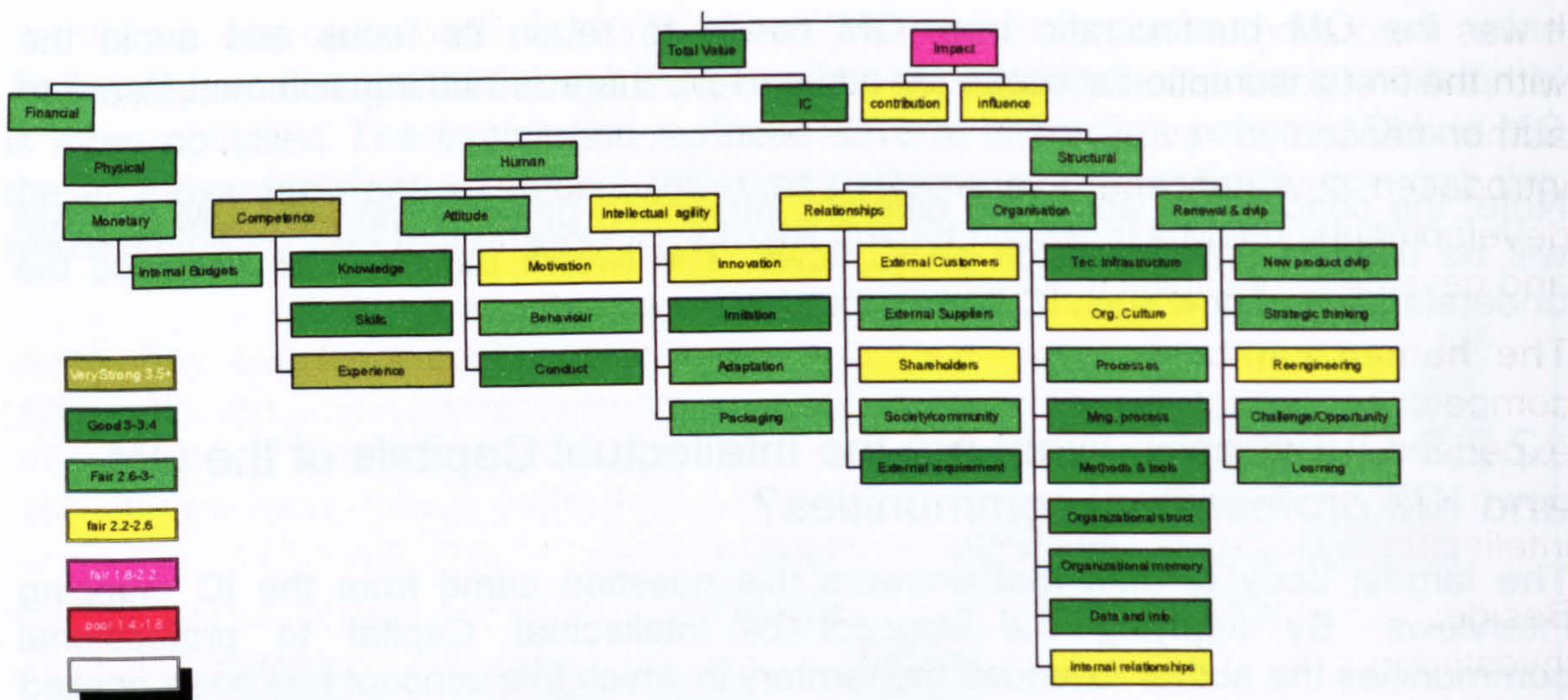


Figure 12-1: Detailed aggregated IC map of QM (aggregation of all QM maps from the expert interviews)

In order to understand the highlights of this map and see the overall pattern, the detailed map has been reduced into the following top level one:

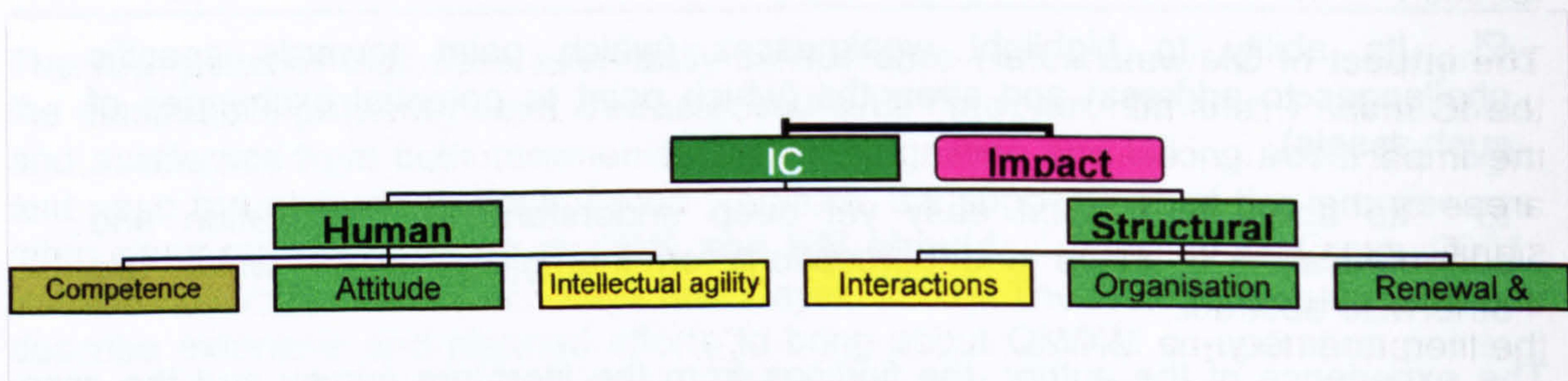


Figure 12-2: Top level aggregated IC map of QM (aggregation of all QM maps from the expert interviews)

The overall IC of QM is *Very Good*, since its two major components – Human Capital and Structural Capital – are *Good*. Out of 46 elements of the map, only one is red (poor), 12 are yellow (fair), and 33 are green (*Good, Very Good and Excellent*).

**The structural capital** is *Good*. This is in line with the evidence in the literature, which emphasised the focus of QM on processes, tools and procedures (Green, 1994; Baldrige, 2002 and Flynn and Saladin, 2001) This was evident also in the TechCom case, where a lot of the activities of the QM community were focused on creating structural capital e.g. creation and computerisation of the company procedures, establishing the corporate performance measurement system and leading the company to ISO9000 and ISO14000 (section 10.5). In the Computer-Aided Focus Groups, most of the roles of QM, proposed by the participants, referred to the creation and maintenance of structural capital, e.g. procedures, standards and management systems (section 9.5). As shown in the map above one of the drawbacks of the QM community is its interactions with external stakeholders. This is in line with some authors' thoughts that state that QM is very much internally focused, perhaps at the expense of external focus and relationships. This is interesting because in the literature on QM the "customer focus" is frequently mentioned as one of the core values (Yong and Wilkinson, 1999). However, the internal interactions (which are part of the "Organisation" capital) are also ranked relatively low. QM also, for example, seems to have ambiguous interactions with its internal customers.



It was interesting to find that the renewal capital of QM is *Good* – perhaps in contrast with the first assumption about this senior and presumably traditional community. The author needed to revisit the 1990-2000 work program of QM at TechCom, which introduced new concepts every year, and re-read some of the papers on recent developments in QM e.g. six sigma, in order to understand that the “green” renewal and development capital made sense.

**The human capital** is *Good*, due to a reasonable attitude level and very good competence capital. It seems that being a mature community pays off – the experience of its members and their good mastery of QM methods is apparent. The down side of this maturity is perhaps only *Fair* motivation (‘yellow’), as well as *Fair* intellectual agility – the QM members, on average, are not very innovative.

Besides *Good* IC, QM also enjoys relatively *Good* financial capital, which can be invested in structural capital and human capital. The fact that almost all interviewees agreed on this point, is well reflected in the detailed IC map (section 8.3). This was clearly the case of TechCom, where until the big financial crisis, finance was never a bottleneck to any activity (section 10.5). The same can be said about the Israeli QM community. The amount of resources that went into the Q99 conference, and the number of participants, is an indication of the financial strength of this community (section 11.4).

**The impact of QM** was perceived by the expert interviewees to be *Poor*, as shown in the IC map. This is mirroring concerns, which are evident in the TechCom case, on the impact, influence and contribution of QM. It has marginal or no impact in four areas of the company performance scheme, some impact in other four areas, and significant impact in five areas – which are relatively less strategic e.g. manufacturing and after sales support (section 10.5.4). This is in agreement with many references in the literature (Skyrme, 2002 and Suresh, 2002).

**The IC/Impact gap:** As already mentioned in the conclusions about the first research question, there is a large gap between the *Good* IC of the QM community and its *Poor* impact. The gap was apparent in the general QM community as well as in TechCom QM community. This gap is one of the reasons for the conclusion that QM needs some leveraging in order to reduce this gap and turn its considerable Intellectual Capital into impact and contribution.

**KM**

As a background for the discussion on the IC of QM, the IC map, already presented in section 8.4, is shown again.

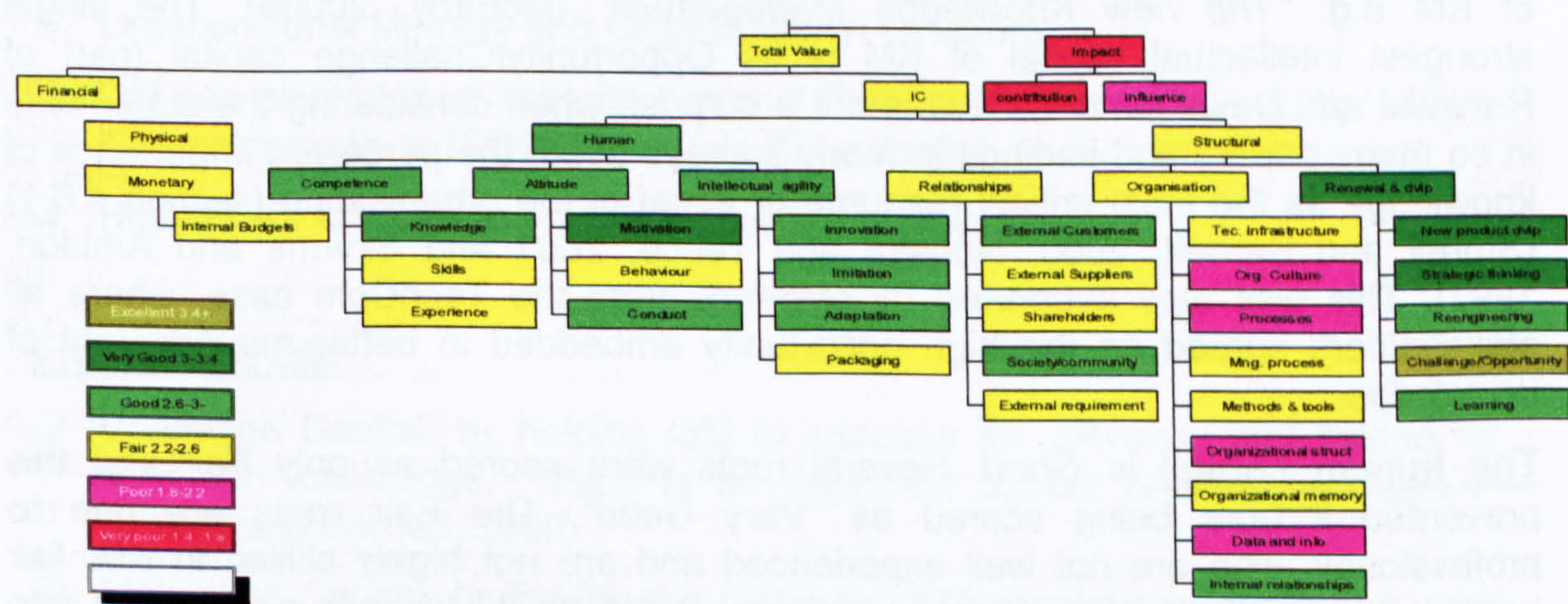


Figure 12-3: Detailed aggregated IC map of KM (based on all maps)



In order to understand the highlights of this map and see the overall pattern, the detailed map has been reduced into the following top level one:

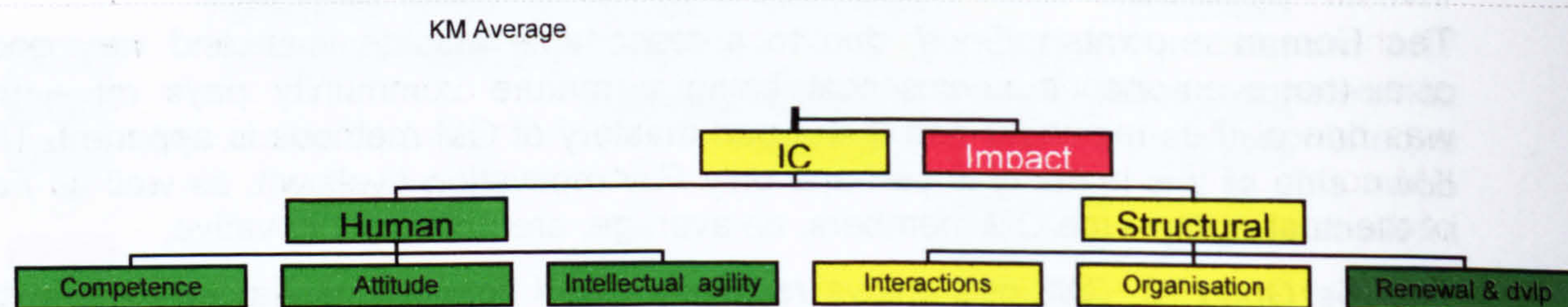


Figure 12-4: Top level aggregated IC map of KM (aggregation of all QM maps from the expert interviews)

The overall IC of the KM community is perceived to be *Fair* by the experts interviewed, due to its *Fair* structural capital. The impact of the KM community is perceived to be *Very Poor*. Out of 46 “boxes” in the detailed KM IC map, 28 are *Poor* or *Very Poor*, compared to 13 in the QM community map.

This finding sharpens and adds to the evidence in the literature, the TechCom case study, and the statements in the “call for papers” for the Q99 conference: “...However, the knowledge management movement did not influence the day-to-day operation of most organisations” (section 11.5).

**The structural capital** was found to be only *Fair* in the expert interviews, as suggested in the literature (using of course different terminology than the IC language). The *Fair* organisation capital correlated with findings on a low level of institutionalisation in TechCom as well as in the Israeli KM community. The *Fair* external and internal interaction capitals mirror the evidence of the difficulty of KM to be embedded in the internal and external organisational business processes. This was also evident in the case of TechCom, where one of the difficulties of the IKM forum was to have business units involved in the KM program, and not only support functions (10.4). As expected, the Renewal and Development capital is *Very Good* – KM is a young community, which is still trying to identify itself, and has already started to reinvent itself (there are many papers on the next phases and development of KM e.g. “*The new Knowledge Management*” (McElroy, 2000b). The single strongest intellectual capital of KM is its Opportunity/Challenge capital (part of Renewal and Development). This is not a surprise when considering the statements in so many papers and findings in many surveys about the perceived importance of knowledge as the most critical resource or asset of the organisation (section 4.6.1) (Storey and Barnett, 2000; Nonaka and Teece, 2001 and Skyrme and Amidon, 1997). This was also supported by evidence from the TechCom case, where all stakeholders agreed on the high opportunity embedded in better management of knowledge.

**The human capital** is *Good*. Several roots were scored as only *Fair* and this prevented it from being scored as “*Very Good*”. The *Fair* roots are due to professionals who are not well experienced and are not highly skilled in KM, fair behaviour capital and fair packaging capital – the ability to pack good ideas into beneficial products, methods and tools. This may explain, for example, the low rate of the tools created by the KM professionals in the TechCom case (section 8.4), or the



low rate of usage of tools in the Knowledge Café in the Quality 99 conference (section 11.5).

The impact of the KM community, as perceived by the expert interviews and visualised in the IC map, is *Very Poor*. This finding supported the evidence from the literature, where many authors discuss the difficulty of showing KM's Return On Investment or even any tangible outcomes (Barth, 2000 and Parlby, 2000). The TechCom case points to the same conclusion. There was, for example, no evidence at all (not even anecdotal) of benefits gained from the Experts Yellow Pages, which was one of the main initiatives of the community. This is also the case of the Israeli KM community – its members are usually not able to show clear outcomes or impact of their activities (section 11.4).

The IC maps of the QM communities surveyed were not identical – there were some notable changes between them. Similar diversity exists in the case of the multiple KM maps. However, the statistical test confirmed that general conclusions can be drawn from the maps as the scatter and range of replies was not great. This helped the author by showing clear patterns for the entire group of KM communities, as well as for the QM communities group.

#### 12.2.4 Question 4: What are the potential flows of Intellectual Capital between the QM and KM professional communities?

This research shows that **there are multiple opportunities for most pairs of QM/KM communities** (which are operating in proximity e.g. the QM and KM communities of a specific company or nation) **to co-operate and support each other through flows of ICs**. Such opportunities were surfaced in the literature survey, the TechCom and Quality 99 cases, the focus groups and, in their most articulated form, in the IC flows maps.

**The specific set of potential flows is unique** to each pair of QM/KM communities, dependent on their specific weaknesses, strengths and challenges. The set of flows proposed in each expert interview was unique. However, analysis of the proposed flows, as well as the aggregated gap maps and evidence from the other data sources, suggest that **there are some flows that are more likely to occur**. The following list provides some examples of flows that emerged from the generic set of strengths and weaknesses of QM and KM communities.

##### From QM to KM

- ☐ Competence capital, in the forms of experience and skills.
- ☐ Organisation Capital, in the form of Processes, Methods and Tools, Organisational Memory and Organisational Structure.
- ☐ QM can also support KM with External Requirements capital, e.g. by adding KM components to ISO9000, or help KM establish its own standard.
- ☐ Besides IC, QM can assist KM also with Financial Capital.

##### From KM to QM

- ☐ Challenge Capital, by helping QM to increase its relevancy and extend its scope to knowledge, *"which is an important aspect of the organisation"* (Storey and Barnett, 2000)
- ☐ Motivation Capital, by having the motivated KM people join forces and work together with QM people on a shared vision and activities.



In addition to these **uni-directional** flows, the author identified some **bi-directional** ones. He refers to specific capitals where the two communities are relatively poor and can work together to improve these areas. For example: Packaging Capital and Shareholders Capital.

As will be discussed in the following section, the fact that certain flows seem to be potentially beneficial and "make sense" **does not guarantee** that they will actually occur. The research and experience showed that in most cases they would not happen. This was shown in the TechCom case and the 1999 Conference case (sections 10.6 and 11.5).

Twelve patterns of potential interactions between QM and KM have been identified by the author. Four of them show how IC can flow through different patterns of co-operation, e.g. "Learning", "Support" or "Sharing". The other patterns are less co-operative, and can be mapped against different ways of not having IC flows at all or having sub-optimal flows. These are "Confrontation", "Take Over" or "Ignorance" patterns, for example. The third group of interaction patterns relates to situations in which either or both communities fade away, thus IC flows are less relevant (but these could be related in a different way – they may stop the communities from fading away).

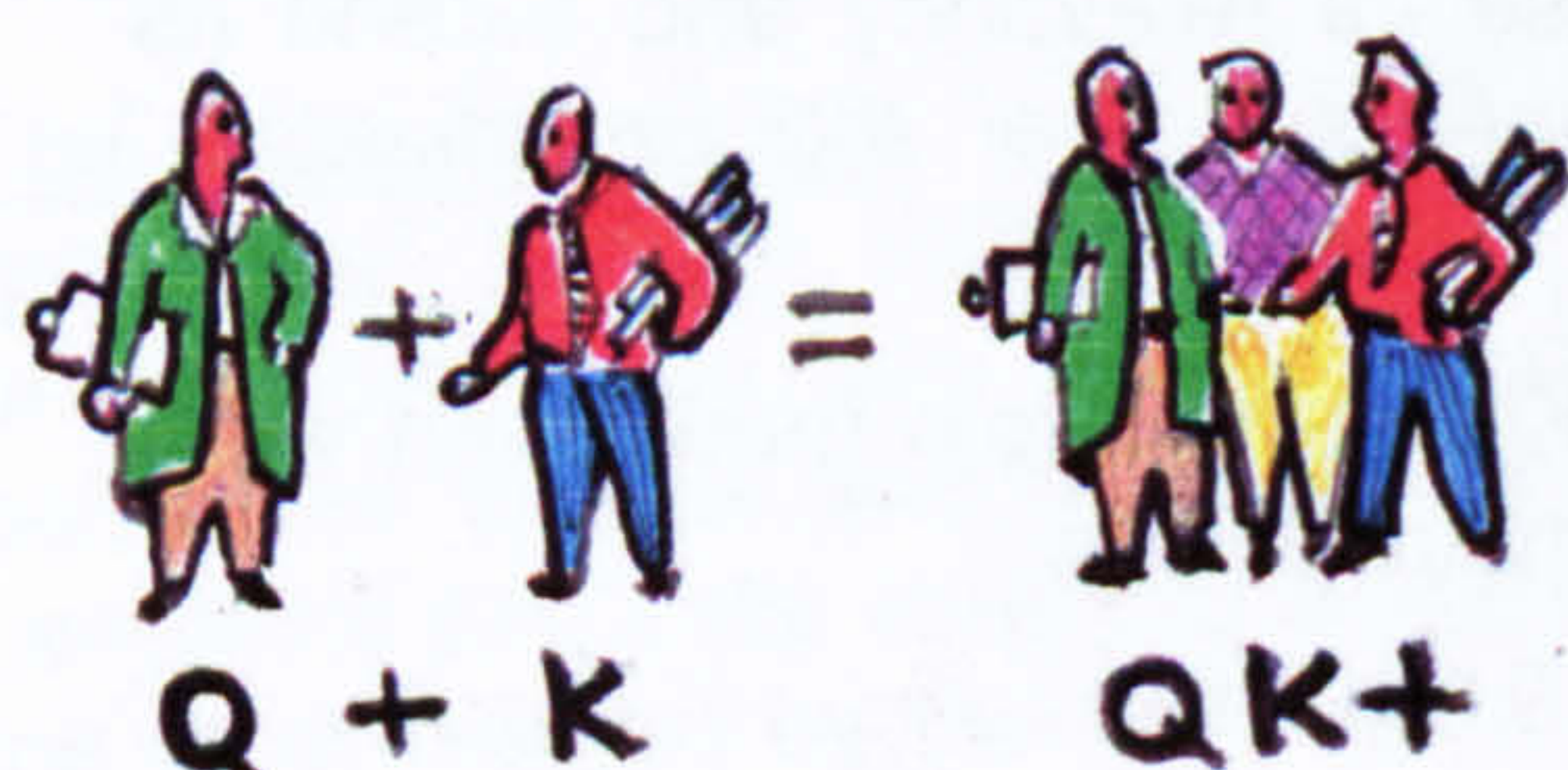
There is a need to create enabling conditions for triggering and sustaining co-operative interactions and IC flows. For example, in the case of TechCom, where such conditions existed, most of the flows listed above **did occur, although they were limited in scope, and did not prove sustainable**, (section 10.6). This partial and temporary aspect is even more apparent in the case of Quality 99 conference, where interactions between the Israeli QM and KM communities lasted only for the three days of the conference, and perhaps also during the preparation period before the conference. The results have not been better in the following annual QM conferences (section 11.5).

Finally, the author concludes that the new methodology created, which includes the IC mapping process, the IC gap maps and the IC flows maps, helped him to arrive at new understanding and insights on opportunities for flows of intangible assets between professional communities, based on complementary weaknesses and strengths. The structured approach, which is supported by a significant amount of data, adds to the rare, unstructured and scattered discussion on this issue in the literature.

### 12.2.5 Question 5: What are the business implications of the flows of Intellectual Capital between the QM and KM professional communities?

In the previous section the author concluded his findings on "**what**" are the potential ICs flows. In this section he will conclude two business questions: "**why**" such flows are important, "**how**" they can be encouraged, and "**why not**" – what are the risks in QM/KM co-operation?

#### Why should QM and KM co-operate?



Here the author revisits again some of the conclusions presented in the answer for the first research question ("Why do the QM & KM professional communities need to improve?").

Organisations invest considerable amount of resources – financial but also in terms of



management attention and expansive time resources of internal customers – in the two communities and disciplines. For example, in TechCom, where managers and engineers alike have a 150% workload, it is very difficult to get their attention to long-term improvement activities. Financial resources for such activities also became scarce after the global crisis in the Telecom market in 2000-2001. To make it more difficult for both communities, the actual return on investment on QM and on KM is perceived as relatively low, compared to the investment, the available potential and even the perceived need (the need to create a true quality process in R&D processes for example, or create a true knowledge culture). This gap is apparent in many papers, as well as in the IC maps, which reflect the opinions of the expert interviews, where the gap between IC and impact is significant. The many commonalities between QM and KM as well as complementary strengths and weaknesses has already been shown. **Based on these commonalities and on the complementary ICs**, it is believed that co-operation between QM and KM can increase the effectiveness of each, reduce the duplication of efforts, reduce the burden on internal customers and contribute to better organisational performance. The QM community is using the concept of “cost of poor quality”. The KM community is talking about the “cost of organisational ignorance”, “organisational amnesia” and cost of “re-inventing the wheel”. Using similar terminology, the author believes that the **cost of “poor ICs flows”** between the communities is considerable.

### Why should QM and KM be careful – what are the risks?

The data collected in the literature, interviews and case studies suggests some warning signs about synergetic interactions between QM and KM. For example:

KM must be careful to avoid over emphasis on procedures and control, and refrain from becoming a bureaucratic discipline. As one professional put it, *“Knowledge can not and should not be managed. KM must focus on creation of enabling environment which allows knowledge to flourish and bring value”*. Another interviewee put it even bolder: *“KM must be very careful not to enter the golden cage in which QM is trapped”* (section 8.7). Thus, automatic adoption of the “organisation capital” of QM by KM is a risky strategy. This point refers both to the essence of the community activities and to the way they are perceived. This is why some of the KM community in TechCom were hesitating to work too closely with QM, in order to avoid being infected by the “procedures and control” reputation of QM (section 10.6). Such hesitation is linked to the perception of QM as a community that *“clings to the past”* and *“devoted to elimination of the very things”* which enable creativity (Pyzdek, 1999).



According to some authors in the literature, the interviewees, the quality 99 steering committee and the TechCom case, QM must focus its efforts on “pure” quality issues – entering a new arena such as KM may result in loss of focus and dilution of resources and attention. In the Computer-Aided Focus Groups, one of the participants had a similar concern, when asked about possible involvement of QM in KM activities: *“QM must be very careful not trying to do other people’s job and responsibilities”* (section 9.5). This is also referred to in the





literature on both communities (e.g. KM: Faran, 2001, Firestone 2001; QM: Shaw, 2002 and Pyzdek, 1999).

### **How – what are the enabling factors**

The author found that although each community can potentially be assisted by and benefit from ICs of the other community, most potential flows are not realised (or are realised in a very partial and temporary way). Although deep exploration of the reasons for the gap between opportunity and realisation were out of the thesis scope, the author would like to suggest several factors that can increase such flows:

**Exchanges:** Professionals, both individuals and groups of professionals are reluctant to ask for and receive help from others<sup>25</sup>. It was suggested that replacing uni-directional flows with bi-directional exchanges, which turns each side into both a contributor and receiver, would increase the likelihood of sustainable co-operation. The term “flows of ICs” was used throughout this research, and the author suggests that this specific type of flow (namely IC bi-directional exchanges) is explored further. Indeed, this was one of the motives in the Quality 99 case, where there was an attempt to ensure benefit to both national communities, and in the case of TechCom, where there was an explicit effort to ensure that each organisational community learnt from and supported the other. In the literature the approach toward this issue is mixed: while some are talking about uni-directional flows (e.g. “*What KM can learn from TQM*” (Cross, 2001) others talk about mutual support. The interviewees represented also the two approaches: some highlighting only the flows from their community to the other, while others generated a more balanced IC flows map, and one even mentioned “win-win” interactions. Most of the QM/KM interactions models drawn by the interviewees were based on bi-directional flows (section 8.7)

**Bridges:** it was discovered that people who belong to both communities are more aware of the opportunity of ICs flows (or more precisely exchanges) and can serve as bridges to ICs between the communities. There appears to be three reasons for their capacity to increase flows:

- ❑ knowledge - they know what the opportunities, strengths and challenges of the two communities and the ICs flows between them are
- ❑ attitude - they respect both communities and are also motivated to help them
- ❑ access - they have good access to the members of both communities.



This was the case in the TechCom case study, where the three people who tried to increase co-operation belonged to both communities (section 10.6). The same observation is applicable to the Quality 99 conference case, where the advocates and promoters of the idea in the steering committee were three professionals who belonged to the two communities (section 11.5). The same factor was found also in the IC flows maps generated in the interviews: the interviewees who belonged to (or

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<sup>25</sup> This is one of the problems that the KM discipline is struggling with. In many KM programs, services, which provide information and access to knowledge (e.g. “Yellow Pages”) were established, but their usage level poor. Against perhaps the initial expectation, the problem lies in the receiving side – while people are relatively willing to contribute knowledge, they are less willing to ask for it and even more unwilling to receive free help from experts in other units, for example. As some researchers put it, there is a need to put more attention on the “demand side”, not the “supply side” (Elroy, 1999).

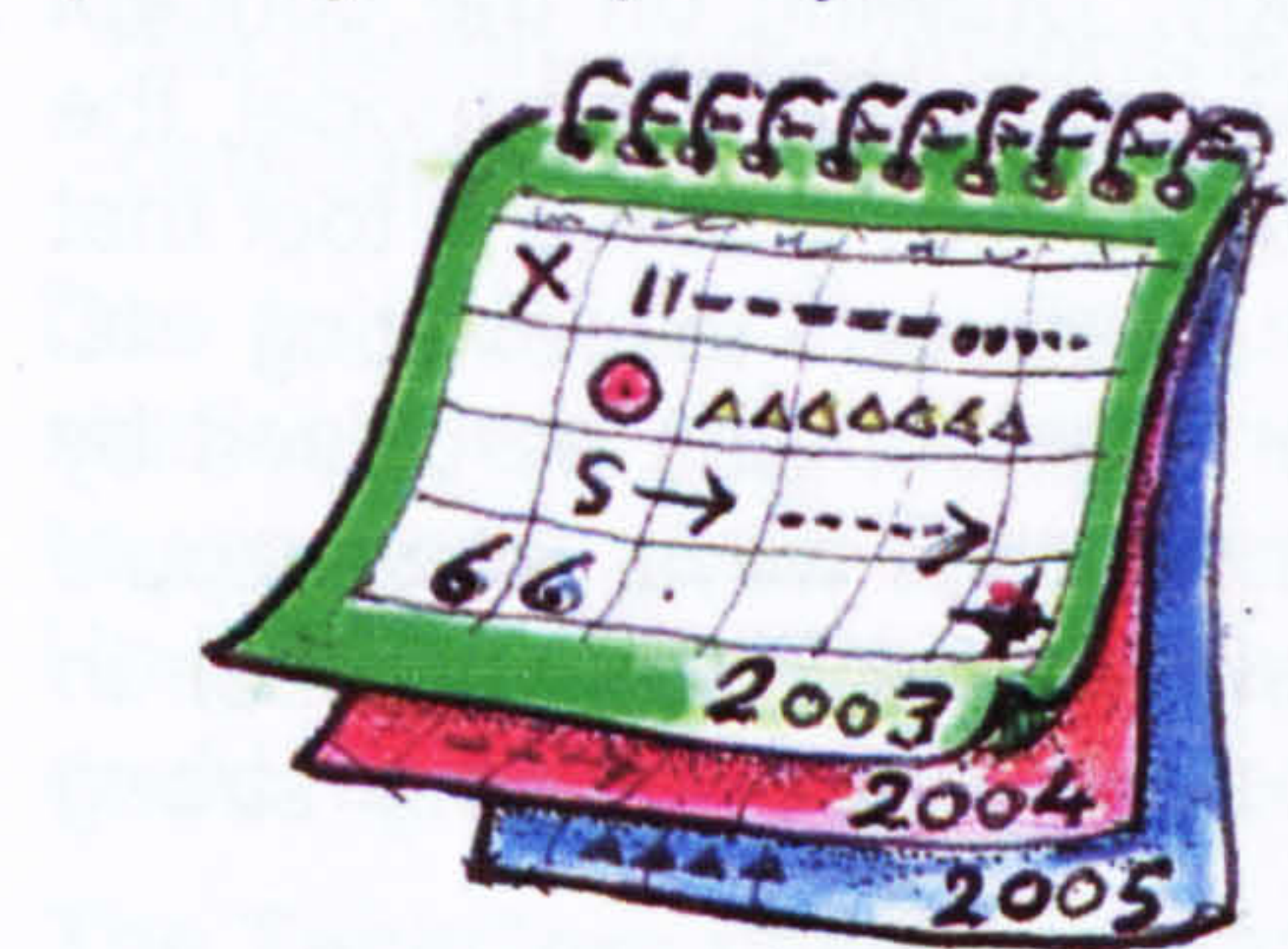


were close to) both communities proposed more ICs flows than the people who were clearly related only to one community (section 8.7). The author found a similar logic in the literature survey. Authors who belonged to or had deep roots in both communities wrote some of the papers that proposed strong co-operation between QM and KM. Two of the better examples are Richard Cross (2001) and David Skyrme (1997), both of whom have a strong background in QM and KM.



**Think global, act local:** it was found that in the two case studies that the value of putting forward strategic statements on the importance of IC flows was limited. For example, the importance of QM/KM co-operation, stated in the “call for papers” for the 1999 conference, did not create a significant change. The author believes that strategic thinking expressed in such manifestos and created for example by IC mapping workshops must be accompanied

by local, limited scale and practical efforts to realise IC flows. Small success would bring the community members to a better understanding of the opportunity and would trigger further flows. In the quality conference case the small 10 QM/KM activities in the “knowledge café” created more understanding of the “Quality by Knowledge” concept than the keynote speeches in the opening session (11.5.3). Similarly, in the TechCom case, the limited scale co-operation activities, such as the introduction of QM’s structured processes to the KM’s document management system, were the means to create mutual respect, which is so critical to co-operation. This is in line with the literature that suggests that the intensity of interactions turns quantity into quality, as claimed by some IC researchers (Edvinsson, 2002).



**Sustainability:** In the case studies, some of the barriers to the realisation of ICs flows was observed, e.g. the resistance to receive help from others, and the organisational competition between support functions which vie for the same internal customers’ attention and resources. Therefore, a deliberate effort to enhance IC flows must be continuous, in order to have sustainable effect. This is why after the 1999

conference the supporters of the QM/KM ideas continued to run a KM track in each of the following conferences. In the TechCom case, there were efforts to ensure continuous IC flows by embedding the QM/KM co-operation into the organisational structure where the CKO belonged organisationally to the QM department, and participated in its weekly management meetings (section 10.6). For the same reason, one of the interviewees stated their intention to use the IC mapping methodology not as a one-time analysis tool, but on a continuous basis to monitor the progress of the IC of their particular community.

**Space for dialogues and flows:** the leaders of both communities can identify some of the potential ICs flows in a structured process, (e.g. one option being the IC mapping methodology that was proposed). Once identified, the relevant stakeholders can work systematically toward their realisation. However, it is believed that such organised efforts should be complemented by emergence of flows in a self-organising and spontaneous fashion. In order to increase such emergence, provision of “space” for flows should be established. The purpose of such space is simple: to





expose the members of each community to the people, activities, concepts, and in general the ICs of the other community, and so enable a dialogue. The basic objective of the 1999 conference was exactly this: the creation of such space for three days. This was the goal of the "knowledge café", the Ventana workshops and other mechanisms for dialogue between the QM and KM people, which could uncover interesting potential flows (sections 9.6 and 11.5). In the TechCom case several opportunities were created to encourage and enable this dialogue. For example, the annual seminar of the chief technology officer (in which QM and KM interacted), the inclusion of QM people in the KM forum, the inclusions of the CKO in the weekly QM management meetings, some aspects of the organisational structure, and even the physical layout of offices (section 10.6).

The business need for QM/KM co-operation has been shown. Considering the strong case for this co-operation, the author was surprised to discover that this is a lost opportunity - in most cases the potential co-operative interactions between QM and KM were hardly realised in a significant and sustainable way.

### 12.2.6 Question 6: Does the IC mapping methodology show utility as an improvement tool in the context of professional communities?



In the conclusions section of the "IC mapping methodology" (section 7.12), it was already concluded that all interviews answered this question positively, when they ranked the different potential uses of the methodology. Drawing on the concept of IC and the original IC Distinction Tree model, the author enhanced the model and created a tool that added several new features to existing IC assessment tools. The new tool was perceived by its users as valuable in several ways, which could support an improvement process (the number in

brackets denotes the scoring of the utility on a 1-4 scale, with 4 being strong agreement on its utility):

- ☐ **Identification of the specific strengths and weaknesses** of and understanding of the community's situation, both in the macro and micro levels (overall picture-3.38).
- ☐ **Communication of the above insights** to all relevant stakeholders, e.g. community members (3.50).
- ☐ **Identification of improvement areas** (3.25),
- ☐ **Triggering of practical improvement action** (3.25).
- ☐ **Identification of potential flows** of ICs between communities based on the new concept of IC gaps maps (3.29).

Moreover, several interviewees suggested concrete scenarios on how the methodology can be used by their communities – either on an individual level, as a group discussion tool or via a combination of the two modes.

Why might the methodology be useful as an improvement support tool that can help a community improves its intellectual capital?



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The author will analyse this by looking at features of the methodology that are important to effective improvement support tools, according to his experience in applying several improvement support tools in the past:

☑ **The concept of Intellectual Capital:** it is believed that the clear and structured approach to intangible assets, on which the methodology is based, can be attractive to a professional community members. This is because the concept highlights both the qualitative and quantitative aspects of abstract “things” which are otherwise difficult to analyse, e.g. “relationships”, “intellectual agility”, “strategic renewal” etc. As already noted before, this was achieved by applying the IC methodology to a new territory, namely to professional communities.

☑ **The PDCA cycle:** The IC mapping methodology can support the PDCA (Plan, Do, Check, Act) improvement cycle (Greene, 1993). The PLANNING phase can be supported by the capacity of the tool to identify strengths and weaknesses, and the triggering of potential improvement areas, and the CHECK phase can be facilitated by the capability of the methodology to show the original and updated situation (IC) of a community.

☑ **Speed of implementation:** The IC mapping methodology can be applied rapidly (it took 2 hours of interviews for a rough-cut initial analysis of each community, and the author believes that a more complete analysis can be applied also in a relatively short time, possibly in a few days).

☑ **Communication:** as revealed in the survey of the methodology users perceptions', the tool was perceived as particularly good in communicating ideas on the situation of a community. **The Visualisation** features of the tool contribute to its communication capability.

☑ **Consensus making:** the tool can be applied in a way that enables group discussion and consensus making about the situation of a community. This is particularly important in change programs.

Due to the fact that the author developed the methodology after the three case studies were completed, he could not test the above stated perceptions and suggestions about the methodology usefulness in a real business environment. However, “what if” scenarios can be generated to think about how the methodology could have been implemented in the case studies:

**The TechCom case:** the leaders of the QM and KM communities could have run the methodology in a workshop with some of the community members from both sides. This would have articulated some of the implicit thoughts in this area, communicated the ideas of the leaders to their community members, and exposed and triggered some concrete opportunities for ICs flows. Perhaps a three-phase process would have worked best: 1. The map completed together by two leaders in a preparation meeting. 2. Then the map completed in a group process by each community. 3. Finally a map created in a joint workshop with members of both communities.

**The Quality 99 conference:** it would have been beneficial to use the methodology in one of the steering committee meetings, perhaps with some invited guests from the KM community (the majority of the steering team were QM professionals). The author thinks that this could have been an effective way to create a more concrete shared vision on opportunities embedded in the conference to increase QM/KM co-operation. This would have probably impacted the conference program – and possibly could have resulted in better achievements of the conference.

**The Computer-Aided Focus Groups:** it could have been very interesting to add a session focused on on-line completion of the IC maps during the workshops. In this way, the technology could have enabled rapid creation of 15 individual maps in each

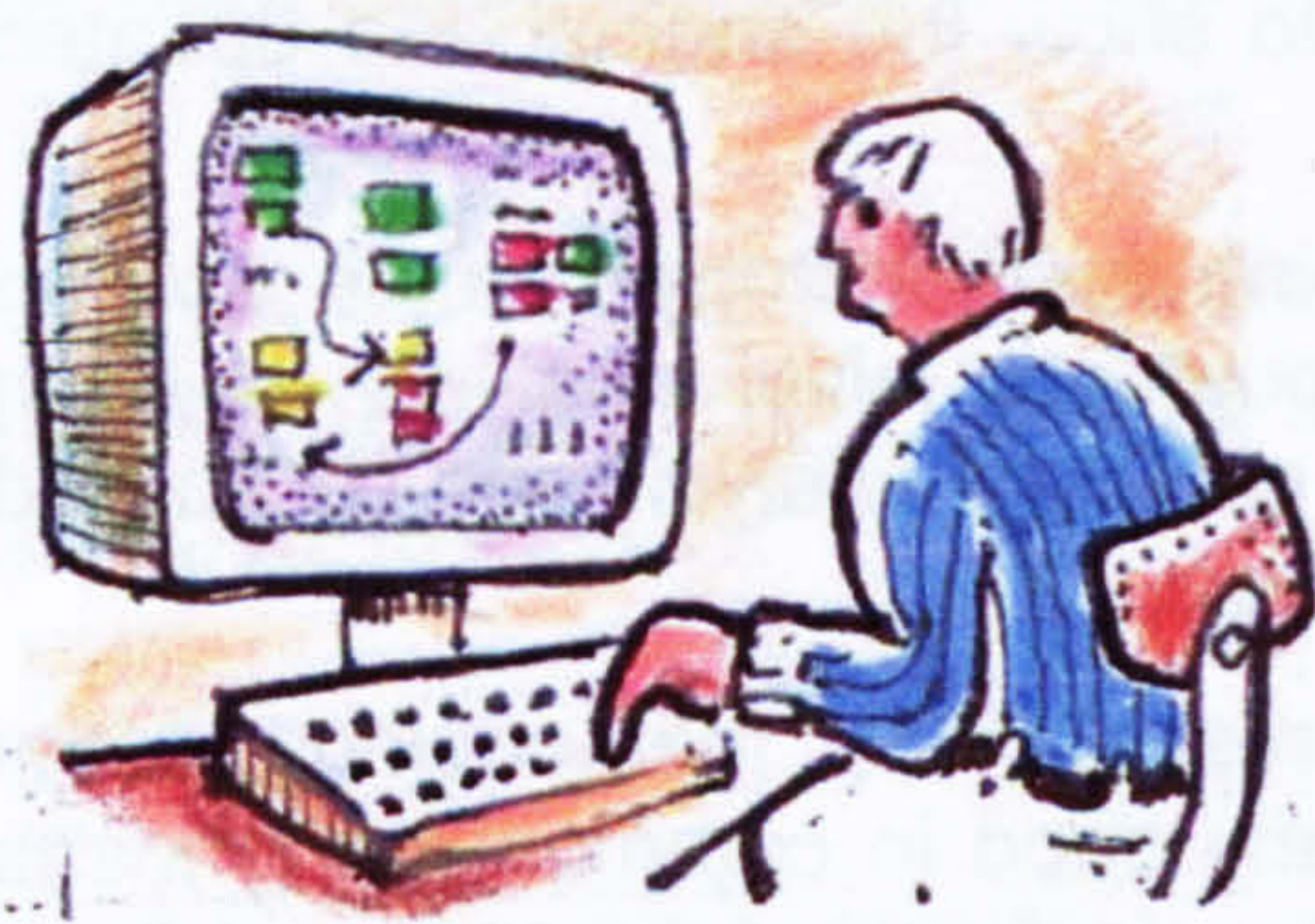


workshop, followed by automatic calculation of the aggregated maps – and augmented by a group discussion about the insights from that map. It is thought that this could have helped the conference participants to better understand the “Quality by Knowledge, Knowledge by Quality” concept and possibly evoke ideas on practical actions towards this end.

### 12.2.7 Question 7: Does the IC mapping methodology show utility as a research tool?

The IC mapping methodology and tool served the author well during the current research for two reasons:

Firstly, it helped to confirm and triangulate the information generated and collected by the other research tools.



Secondly, it helped the author arrive at new insights. Although there was some understanding of the ICs of QM and KM, as well as on potential flows, the data collected by the mapping methodology enriched significantly this understanding, clarified and helped articulate issues which until using it were implicit. Moreover, it suggested some data that was at first glance contradictory to what was initially expected. After deeper analysis it was

discovered that this data complied with evidence from other sources. Therefore, it is believed the tool provided non-trivial data.

Based on (good) experience with the methodology in the areas of QM and KM, and extrapolation of future uses, it is concluded that the IC methodology is useful, not only to this research, but to research in other areas such as:

- ☐ Intangible assets of other professional communities (for example accountants, R&D, marketing).
- ☐ Interactions between other pairs of professional communities (e.g. marketing and R&D, HR and QM, doctors and social workers).
- ☐ Intangible assets of organisations or specific constructs of organisations.
- ☐ Intangible assets of flows between nations or regions.

The author can generalise the above suggestions and propose the use of the IC mapping methodology in a wide range of research areas, which are focused on the assessment, and analysis of professional communities or other forms of organisations in which intangible assets play a major role.

Why might the tool be appropriate for researchers in the above fields?

The author will analyse this by looking at those features of the methodology that might be important to an effective research tool. Some of these characteristics have also been listed in the discussion on the applicability of the IC mapping methodology as an improvement tool:

- ☒ **The concept of Intellectual Capital:** it is believed that the clear and structured approach to intangible assets, on which the methodology is based, can be attractive to researchers. This is because the concept highlights both the qualitative and quantitative aspects of abstract “things”, which are otherwise difficult to analyse, e.g. “relationships”, “intellectual agility”, “strategic renewal” etc.



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- ☑ The methodology is good at **triggering meaningful and rich conversations** in interviews focused on the abstract issue of intangible assets of the explored entity (chapter 8).
  - ☑ The methodology provides a convenient way to **accumulate data**, and turn individual opinions into “collective intelligence” or perception.
  - ☑ The methodology is **customisable** to the specific needs of the research; i.e. it can be used to explore different kinds of intangible assets that can be added to the IC distinction tree proposed.
  - ☑ The **visualisation** features of the tool can help the researcher identify interesting patterns between ICs of one organisational entity, or in a collection of ICs maps. They can also help communicating the results of the research to the academic world or business world alike.
  - ☑ The outcomes of the methodology, e.g. the significance of differences between ICs of different entities, can be tested numerically. Thus, the methodology can add reliable quantitative data to research.
  - ☑ The methodology can be implemented with **limited time resources**, as demonstrated in this research. This makes its implementation feasible in limited resource research constellations.

Three comments from the author:

1. While in some of the above the full methodology can be applied, in others only parts of it are required.
2. It is thought that some customisation will be required to some elements of the methodology according to the specific research objectives.
3. Although the tool served well for this research, there is room for improvements, as discussed in the “future research” section. Such improvements would help improve the reliability and usability of the tool.

## 12.2.8 Hypothesis

**Flows of complementary Intellectual Capitals between the Quality Management and Knowledge Management professional communities can leverage both communities.**

The research questions were structured to help answer the above hypothesis. The conclusion is based on the answers to the five research questions (Q1-Q5) discussed above.

The author concludes that the QM and KM communities are in great need of leveraging their ICs. Both suffer from some weaknesses, but also some clear strengths, referred to in the research as poor and good ICs. Their impact is low compared to their potential and their ICs. The complementary nature of the ICs of the two communities, combined with commonalities in strategic objectives and basic concepts, provides an opportunity to improve the IC and impact of both, by increasing flows of ICs between them.

It is important to highlight two interesting points, which relates to the “leveraging” element of the hypothesis:

The first point is a particular attribute of Knowledge, which is discussed in the literature and which differentiates it from other types of assets, e.g. financial or physical ones. Contribution of knowledge does not diminish the amount or the quality



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of the knowledge of the contributing organisation. In many cases the opposite is true – the very act of contribution increases the knowledge (Alee, 1997). However, some believe that this equation is applicable only in a trust culture, and in many cases this calls for cultural change, in order to avoid the “Knowledge is Power” behaviour (Ruggles, 1998).

The author believes that the win-win equation can be extended to the general case of Intellectual Capital (of which Knowledge is one asset): flows of IC between professional communities do not diminish the IC of the contributing community, it may even enhance it. The case of TechCom demonstrates this, where QM procedural tools were used to support KM activities. The KM activity and its Structural Capital benefit by gaining a capability quickly (the tool) and the QM toolset is improved through learning about their use in new domains, Structural Capital (tool knowledge) and Relationships Capital (new contacts). Thus, flows of ICs from one community can enhance the contributed ICs and leverage the overall IC and impact of the contributing professional community.

While the first point takes the perspective of the contributing community, the second takes the perspective of the organisation in which the two communities operate. This thesis has shown that there is a significant gap between the IC of the QM and KM communities and their impact and contribution to the organisation's performance. This means that the organisational investment in these communities in terms of human resources and other financial capitals, as well as intangible assets such as management attention, are not fully realised. The literature frequently discusses the “return on investment” problem of both communities (e.g. QM: Singhal and Hendricks, 1999, KM: Ruggles, 1998). Thus, flows of IC between these communities means that each community may help the other community to leverage its existing IC in order to turn it into value to the organisation. When considering the “no-diminishing” or ‘win-win’, characteristic of IC flows, the concept of leverage becomes even more important.

The author has shown the hypothesis ‘Flows of complementary Intellectual Capitals between the Quality Management and Knowledge Management professional communities can leverage both communities’ to be valid for the QM and KM communities in general.

## **12.3 Contribution to Knowledge of this research**

Having taken a problem-oriented approach to the research, drawing on knowledge from a number of fields to help understand the real-life situation, the author concludes that a contribution to knowledge was developed in two related fields:

- ☐ The research of QM and KM, and of QM and KM professional communities in particular.
- ☐ And the research of Intellectual Capital.

### **12.3.1 Insights on QM and KM communities**

#### **12.3.1.1 Insights on the situation of QM and KM**

The literature is full of anecdotal evidence and partial descriptions of the problems, weaknesses (and to less extent, also strengths) of QM and KM communities. However, by collecting, categorising and processing this information, as well as large amount of relevant data from three case studies and fourteen expert interviews, a **structured and more complete account** on these issues was generated. An insight on the relative positions of QM and KM on their **maturity lifecycles** was also



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suggested. This can contribute to the analysis of each community, as well as to the exploration of the interactions between them.

Moreover, the IC maps of these communities, augmented by insights from the case studies, significantly enhanced the understanding of the situation of QM and KM. This is achieved by putting these weaknesses and strengths in a systematic and comprehensive framework. This enabled the author to articulate new ones, which are not described explicitly in the literature (e.g. the scope of the professional community's challenge and its capacity to reengineer itself).

The enhanced IC maps, which include a reference to the impact of a community, generate additional insights into the situation of the QM and KM communities. For example the **gap between the IC of these communities and their impact**, or the difference between the capabilities of the individual community members and the organisational capabilities of the community (in the case of KM). These factors are not referred to in the literature.

#### 12.3.1.2 Insights on QM and KM interactions

The author has identified twelve potential patterns of QM/KM interactions, covering the full spectrum from co-operation through competition. While most were occasionally mentioned in scattered locations in the literature, this was the first time that a rich **"interactions inventory"** was collected, articulated and described systematically in one framework. It was applied in the two case studies as well as to the data collected in the focus groups. This validated the applicability and utility of this new framework. Moreover, the logic behind these patterns was articulated. The author also discovered an **interesting gap** between the set of patterns that are theoretically expected to occur based on the analysis of commonalities and complementary strengths and weaknesses, and the actual set of patterns observed in the cases and referred to in the literature.

#### 12.3.1.3 Insights on QM/KM IC flows

The IC flows maps generated in the expert interviews, as well as the analysis of the case studies, provides new **understanding of the opportunities for flows of intangible assets** between QM and KM communities. Examples include flow of experience, knowledge and know how on a wide range of improvement concepts and tools from QM to KM and flow of "Challenge", "Motivation" and "Creativity" from KM to QM. The existing literature does mention the potential for positive interaction between the QM and KM communities (Wijj, 2002 and Cross, 2001) but this is offered only as the authors' opinion and is not based on **analysis** of multiple experts nor of actual cases.

The author also discovered a set of possible **enabling factors** for such flows, e.g. space for intensive interactions, human bridges and the emphasis on on-going limited scale flows as a trigger to more significant ones. These new factors add to the list of enabling conditions found in the literature. To complete the picture, the author articulated a **set of risks** that might be related to enacting these QM/KM flows, e.g. the risk of KM entering the procedural "golden cage" in which QM is trapped.

The author was surprised by the scale of the lost opportunity for both communities and for the organisations they operate in.

#### 12.3.2 Contribution to knowledge in the IC research area

The field of IC is a new and rapidly growing area of research. The author believes that this research has contributed to both the theory of IC and to the growing body of methodologies and tools that support better management of IC, as shown below.



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### **12.3.2.1 Assessment of IC of professional disciplines**

The concept of IC in general, and the assessment of IC in particular, has previously been applied mostly in the domain of formal organisations, and more recently also to regions, nations and even individuals. In this research the author extended the application territory, by applying the IC concept also to professional communities, an interesting development because they are less structured and less well defined than the domains mentioned above.

This involved the need to modify the concept to the new domain. For example, the author added several new “roots” to the IC distinction tree such as “External Requirements Capital” and “Challenge Capital”. This enriches the body of knowledge on categories of IC.

### **12.3.2.2 IC maps**

The author has designed a new way to visualise the IC of entities (professional communities in this case). By using one of the established IC concepts – the IC distinction tree - and adding the visualisation idea of “traffic light” colour coding, the author created a new visualisation model and supporting tool to map and communicate the IC situation of an entity.

One particularly important enhancement of the IC map was the inclusion of the “Impact” branch, which is presented next to the IC tree. Putting them together helps to gain insights into the relationships between the Intellectual Capital of a community and that community’s ability to enhance its influence and contribute to the environment in which it operates.

### **12.3.2.3 IC gap maps**

The author has proposed, used and shown utility for the new idea of mapping “IC gaps” as a way to identify potential IC flows between two entities (professional communities in our case). Moreover, a process to generate the IC gap map of two entities was created and tested, which the expert users found useful.

### **12.3.2.4 Identification of potential IC flows between organisational entities**

“IC flows” have been discussed in the literature mostly in the context of internal flows between different IC assets. The author extended the scope of this term and applied it to the flows of IC assets between different entities – in this case professional communities. Furthermore, the author also designed and tested a methodology to identify, visualise and communicate such flows.

## **12.4 Recommendations for future research**

### **12.4.1 Research directions**

The research left many areas only partially explored. There are many opportunities for more scientific work in the domain:

#### **12.4.1.1 Seeing more parts of the beast, and mixing more colours**

In the research the author focused on the interactions between two communities – QM and KM. However, the metaphor of Mintzberg on the benefit of “seeing the whole beast”, indicates the benefits of examining, in detail, the interactions of a larger set of communities which may collaborate in the journey towards organisational excellence. As the first candidates to join QM and KM in this extended set of communities the



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author suggest considering Human Resources, Information Technology and Accounting.

#### **12.4.1.2 Generalisation of inter-community interactions**

It would be interesting to attempt to generalise the findings on QM/KM interactions. Can they be generalised to professional communities that work in similar domains? For example, a pair frequently mentioned in the literature was Marketing and Development disciplines. Do they interact in a similar way to the QM/KM pair?

#### **12.4.1.3 Further modification of the Professional Community's IC tree**

All the experts that were asked to complete the community's IC maps agreed that the suggested tree is generally applicable and relevant. However, their comments made the author realise that the tree can be enhanced, and further scientific work is required to explore what the specific ICs of professional communities are. This work will discover new relevant categories, and possibly point to some of the original IC categories that are perhaps relevant to commercial organisations, but not fitting the characteristics of professional communities.

#### **12.4.1.4 The relationships between IC and Impact**

As already reported in the "contribution to knowledge" section, the author found interesting relationships between the IC and impact of the QM and KM communities (mismatch in the case of both). It would be interesting to research the reasons for such mismatches. The findings might lead to profound changes in the model of IC.

#### **12.4.1.5 The enabling conditions for IC flows and exchanges**

The author has identified in the two case studies some of the enabling conditions that can enhance the probability as well as the effectiveness of IC flows between QM and KM. However, it is believed that this issue deserves much deeper research that will involve several disciplines and use multiple perspectives – for example economic, sociological and psychological. Similarly, it is believed that the exploration of enabling conditions should be complemented by the identification of the factors that block such potential flows. The author thinks that such an examination will require a large set of case studies, covering both successes and failures in this area.

#### **12.4.1.6 The cost of poor IC flows**

As mentioned in the previous section the QM community is an expert at calculating the cost of poor quality. Some KM professional attempted to measure the cost of "re-inventing the wheel". The reason for focusing on these concepts is that they add an economic dimension to disciplines that are otherwise considered as fuzzy by many business people. The author suggests exploring the applicability of these concepts and tools to the case of co-operation between professional communities.

#### **12.4.1.7 Application of the IC mapping methodology to other domains**

The author developed the IC mapping methodology in order to help analyse the interactions between two professional communities. However, it will be interesting to explore the application of the methodology in different domains – for example to the research of Mergers and Acquisitions. Mapping the ICs of the involved organisations can lead to interesting research and business insights about the full scope of opportunities embedded in such organisational moves.

### **12.4.2 Improvement of tools**



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*The application of the IC mapping methodology and tools in the expert interviews surfaced many opportunities and ideas for their improvement. Interviewees proposed some of these ideas and the researcher generated others. Those opportunities refer to both the potential research and business uses of the methodology and tools. Here are the most significant ones:*

#### **12.4.2.1 Group IC assessment**

The IC mapping methodology designed for the research was based on individual expert interviews. The author believes that it can be beneficially applied to group discussions. This has the potential to add richness to the insights gained from the exercise, by creating conversations between different stakeholders of a specific community. However, this will require significant change in the methodology. One interesting way to do this is by combining two methodologies used in this research. The author suggests experimenting with the Ventana electronic meeting technology as the technological platform for such group IC mapping sessions.

#### **12.4.2.2 Rich data exploration functionality**

The IC mapping methodology generates a large set of data that refers to many ICs in many organisations. The author used three ways to explore these data: individual maps of a specific community (e.g. a single company), aggregated maps for the general professional community, and inter-community IC Gap maps. It is believed that there are more ways to investigate the data, using the technologies of data mining. The author suggests research in these directions, which exploit computerised technologies for the benefit of deeper analysis of Intellectual Capital.

### **12.5 Business implications - recommendations for practitioners**

The author has learned that there are considerable opportunities for co-operation between the QM and KM professional communities, based on flows and exchanges of Intellectual Capital. Therefore, the author proposes the following recommendations to three groups:

#### **12.5.1 Recommendations for top management**

Many organisations are investing considerable resources to support professional communities, such as QM, KM, HR, IT etc. However, the return on these resources, in terms of contribution to the organisational performance, is often less than might have been expected. The author recommends that top management guide and encourages such professional communities to systematically exchange Intellectual Capital, i.e. co-operate and join forces, support each other, share knowledge and methods and to complement each other using their relative strengths. It was discovered that although the potential for such flows is significant it does not come naturally to most professionals and hardly happens. This is why such intervention (i.e. by encouragement, not by control) from management may be required.

The author recommends mapping and visualising the Intellectual Capital of each community this may help in the identification of exchange opportunities as well as in their communication to relevant stakeholders.



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## 12.5.2 Recommendations for the QM and KM professional communities

The author has articulated the recommendations to these communities in a manifesto that was sent to several leaders of the national QM and KM communities (see manifesto in Appendix I). This one page manifesto suggests ways that both communities can explore how to co-operate in a synergetic way.

## 12.5.3 Recommendations for leaders of other communities

Although the research focused only on the QM and KM communities, it is believed that the same principles elaborated above can be applied to other support communities, such as HR, IT and Accounting. Moreover, although there are significant differences in the characteristics and challenges of support communities and the communities of the line-functions professionals (e.g. marketing and R&D), it is believed that some of the same principles are applied there as well.

# 12.6 Weakness and Strengths of the Research

The weaknesses and strengths of this research have already been discussed in the “Research Methodology” chapter, the “IC Mapping Methodology” chapter and in the concluding sections of some of the other chapters. The major ones are given again here:

## 12.6.1 Weaknesses

**Personal involvement:** the author was personally involved in the research questions in more than one way:

- ☐ The author is an active member of the two professional communities explored in this research
- ☐ The author was active and led many of the activities discussed in the two case studies.
- ☐ The author is a promoter and supporter of the basic idea explored in this research: flows of ICs between QM and KM.

The risk is that such personal involvement can lead to bias in interpretation of the research data.

In order to minimise this risk, both the Computer-Aided Focus Group tool and the IC mapping tool were designed and used in a way that surfaces the original voices of the people involved (workshop participants and interviewees). Secondly, the author tried to bring conflicting opinions into the research. Thirdly, statistical tests were applied to test the results of the IC mapping. Fourthly, during the interviews, the author tried to minimise the influence of his personal opinions on the responses of interviewees. For example, one way was to first ask them to map the IC of a community, and only then discuss with them the implications and possible ways of interpreting their map.



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**Part time:** The researcher suffered from the common problem of part timers – the need to split time resources between the research work and his work. The cost was apparent:

- ❑ The research plan took longer than a full timer's program. Luckily, the nightmare of the author – that the problem might disappear during this time – was not realised; thus the research questions did not become obsolete.
- ❑ The amount of work that could be put into the validation plan was limited. This resulted in a smaller set of interviews that the author would otherwise have planned, and a smaller amount of case studies. However, the richness of the data that was collected covers for this weakness.
- ❑ The author wished that there he had more time to elaborate on the enabling conditions of IC flows. However, this will be for future research.

## 12.6.2 Strengths

Surprisingly, the author found that some of the weaknesses should also be present in the strength list.

**Personal involvement:** Once the risk of personal bias is taken care of, the personal involvement of the author becomes an advantage – it implies deep understanding of the problems, of the players, and implications of potential solutions. Moreover, it is believed that the personal passion, to help the QM and KM communities in solving their problem, adds a certain quality to the research.

**Conjunction of expertise areas:** the conjunction of the expertise areas of the author in some of the elements of the research, namely QM, KM adds to the depth of discussion on QM/KM interactions.

**Part time:** once the disadvantages of the limited time resources of the author were managed, the advantage of this issue is surfaced: throughout the research the author could exchange information and knowledge between the two worlds – the research world and his business world. The author can re-state it using the framework of the research itself: **being part time enabled exchanges of Intellectual Capital between the author's research and business world.**

**"Good" problem:** The problem the author explored has two important characteristics:

It is a real problem – the two professional communities are facing major problems. In some cases this can and is leading to serious implications for the communities, (e.g. risk of KM fading away) and to the organisations in which they operate (little contribution and little return on investment in these communities).

There is enough room for research – although there are multiple references and authors in the QM and KM literature (which is an advantage) the specific problem, as a research area, was not over-explored. Perhaps the fact that such a large space for further research in the same area is left behind is an indication of the scale and quality of the problem.

**Effective conceptual framework:** the author believes that the application of the IC concept and the IC concept flows on the research problem provided a good framework. This framework represents significant novelty, and at the same time it is based on reasonably solid foundations - the IC concept being researched for more than a decade.



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**“Good validation program”** – the composition of the validation program enabled the author to examine the research questions from several perspectives and sets of data (literature, IC mapping, data from Computer Aided Focus Groups and two case studies). This plan provided the author with:

- ❑ A rich set of data
- ❑ Triangulation
- ❑ Multiple perspectives,

Thereby enriching and validating the conclusions drawn from the research.

**“Good” tools:** the author believes that the IC mapping tool developed was instrumental in analysing the research questions. It enjoys a useful combination of visual features, speed of use, richness of outputs and a sound theoretical framework

**Contributions from first-class experts:** one of the strongest elements of the thesis is the quality of contributions gained from the 14 people interviewed – all have relevant experience and positions, and most are experts in the related areas of KM, QM, Communities and IC.

## 12.7 Final comments

The author would like to reflect back on the long period of the research and make several final comments:

The choice of the research subject was triggered by the personal belief of the author that synergies between the QM and KM communities provide a significant opportunity for both to increase their contribution, influence and impact. However, this belief was based on limited scope, on personal experience, on intuition and perhaps on common sense. The author was delighted that the research supported his early assumptions – in a systematic and scientific way. He is also satisfied that the research articulated scattered ideas he had years ago, and that they are now organised into a coherent framework (of IC).

The author found the research work an opportunity to take many small “time-outs” from his business work and enabled him (sometimes forced him) to shift attention from day-to-day tasks to scientific work that does not have immediate implications.

The other component of the benefit from doing a Ph.D. as a practitioner is that his background, as well as ongoing work, enabled the author to bring a significant amount of “real life” into the research.

The author was also satisfied with the opportunity to introduce a lot of visuals and colours into the thesis – as the visual language is his preferred way of communication, this element was particularly important to him and the patience of the reader who has reached this point is acknowledged.

And finally, the author realised that although the research has achieved a lot – it also surfaced significant territory that was not explored. However, this discovery did not lead to frustration. It was just one of many lessons and insights about the real nature of science which the author learned during the research period. Such learning cannot be gained through taking a course on the Philosophy of Science or reading the book “Real World Research” (Robson, 1994). It can be achieved only through “on the job learning” – and this is the main contribution of this thesis to the author.



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## Appendix I: A Manifesto to the QM and KM communities

20 March 2003

*Dear Quality and Knowledge management professional,*

You may remember that the title of the 1999 Israel National Quality conference was "Quality by Knowledge". The organisers of the conference felt that there may be very interesting synergies between the two professional communities.

Since then, we have conducted a research on the opportunities embedded in different patterns of co-operation between Knowledge Management and Quality management. We concluded the exchanges of specific Intellectual *Capital* (\*) assets between professional communities is a win-win-win strategy that can lead to benefits to the communities involved as well as the organisation in which they operate.

We would like to put forward the following recommendations:

**Identify, articulate and map the "Intellectual Capital"** of your community. This perspective will provide you with eye-opening insights on the specific strengths and weaknesses of your community, and will clearly highlight improvement areas.

**Actively look for possible opportunities to exchange Intellectual Capital** between your community and other relevant communities. This may complement the capabilities of your community, and contribute significantly to the influence, contribution to organisational performance and impact of both communities. Attention: as you may know anyway from your experience, such exchanges are not natural in most cases. The more common case is of internal politics, internal competition and mutual ignorance. This is why considerable efforts are required to realise the potential flows. Guidance and encouragement from management can help, exchanging people between the communities so they become "bridges" or "ambassadors" is also recommended. Starting small and getting early wins is another good mechanism. You probably are ware of other tactics that are appropriate to the circumstances of your specific community and organisation.

**Put special focus on the co-operation between the KM and QM communities.** We see here many particular opportunities of synergies and exchanges of Intellectual Capital (\*). For example:

- KM can benefit from the "*Organisational Capital*" of the Quality Management community, in order to turn KM from scattered efforts into corporate wide program which is well institutionalised in the organisation.
- QM can enjoy from the innovation powers of the KM community, in order to introduce new ideas, concepts and tools into the quality domain.
- Both communities can cooperate to improve together their capabilities in "*Packaging Capita*", i.e. packaging their methods and tools into attractive products and services that will be significantly implemented by the target internal customers.

You are invited to contact me for further details on the research findings and recommendations, and in order to have access tool for mapping your community's intellectual capital.

Sincerely yours

Ron Dvir

*\* Comment:* Intellectual Capital (IC) includes all of the intangible resources that contribute to the creation of value for the organisation. These include the knowledge, competence and skills of people, working methods, processes and systems. It also includes the culture that supports the people, the image in the market place and relationships with customers, alliance partners and suppliers (ICS).